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Spokane County Comprehensive Wastewater Management Plan

Jones and Stokes Associates, Inc.
Sacramento, CA

Prepared for

Environmental Protection Agency
Seattle, WA

Aug 81

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Region 10
1200 6th Avenue
Seattle WA 98101

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Environmental Impact Statement

Final

Spokane County Comprehensive Wastewater Management Plan

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Davidson, Kathryn M.

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Jones & Stokes Associates, Inc.
2321 P Street
Sacremento, CA 95816

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This final Environmental impact statement states the Environmental Protection Agency's recommended alternative for wastewater treatment in Spokane County, Washigton. The alternative chosen by the county and approved by the EPA includes collection and transport of all county wastewater to the city of Spokane's central wastewater treatment plant. The EPA has proposed two conditions to be placed on this decision: 1)general water quality monitoring in the Spokane River and Long Lake is continued, and 2)an archeological records search must be completed to comply with the National Historic Preservation Act.

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SEATTLE, WASHINGTON 98101

August 14, 1981

REPLY TO ATTN OF: M/S 443

TO: All Interested Agencies, Public Groups and Citizens

Enclosed for your review and comment is the Final Environmental Impact Statement (EIS) for the Comprehensive Wastewater Management Plan for Spokane County, Washington.

This EIS was prepared in compliance with the National Environmental Policy Act and implementing Agency regulations (40 CFR Part 6, November 6, 1979). Availability of the EIS will be announced in the Federal Register on August 14, 1981, beginning a 30-day comment period which will close on September 14, 1981. This agency will take no administrative action on this project until the close of the comment period.

We will appreciate your review of this document any comments you may have. Please send all comments to Kathryn M. Davidson, M/S 443 at the above address.

FINAL ENVIRONMENTAL IMPACT STATEMENT

PROJECT NO. C 530-918-01

COMPREHENSIVE WASTEWATER MANAGEMENT PLAN
SPOKANE COUNTY, WASHINGTON

Prepared by

U. S. Environmental Protection Agency
Region 10
Seattle, Washington 98101

With Technical Assistance From

Jones and Stokes Associates, Inc.
2321 P Street
Sacramento, California 95816

Responsible Official

L E Coate

L. E. Coate
Deputy Regional Administrator

July 13, 1981
Date

PREFACE

On February 20, 1981 the U. S. Environmental Protection Agency (EPA) released for public review and comment a Draft Environmental Impact Statement (EIS) which evaluated the environmental impacts of the Comprehensive Wastewater Management Plan (CWMP) prepared by Spokane County, Washington. The decision to prepare an EIS on the county's proposed project was based on the EPA Step 1 construction grant application from the county to plan, design and construct wastewater treatment facilities. The Draft EIS was prepared concurrently with the draft CWMP in order to reduce unnecessary delay. EPA has prepared this Final EIS to respond to comments received on the Draft EIS and to evaluate recently received information relating to the water quality of the Spokane River. The following discussion summarizes the activities completed to date and the issues identified during the EIS process.

The Draft EIS evaluated seven alternatives, the "no-action" alternative and six "build" alternatives. Common to all "build" alternatives was the sewering of identified areas of the county on a schedule phased to meet the demands of urban growth. The primary goal of the sewering is to eliminate on-site and community waste disposal facilities over the Spokane Valley-Rathdrum Prairie Aquifer, a designated "sole-source" drinking water aquifer, and thereby reduce the potential for contaminating this aquifer. The primary differences in the alternatives were the location and methods of treatment and disposal of the effluent, and the cost associated with the various alternatives.

The preferred alternative identified by Spokane County in the CWMP is Alternative A, which would collect wastewater from all sewered areas of the county and transport it to the City of Spokane wastewater treatment plant for treatment. All effluent would be discharged directly to the Spokane River.

After the Draft EIS was released, the State of Washington Department of Ecology (DOE) released the preliminary results of Phase I of their waste load allocation study for the Spokane River. The results of this study heightened concerns about future water quality in Long Lake, located below the City of Spokane wastewater treatment plant. The study indicated that increased discharges of effluent to the Spokane River might aggravate current (algae growth) conditions in Long Lake. As a result of this information, several modifications to the county's preferred alternative (identified as Suboptions A-1 through A-5) were investigated by the county, DOE and EPA. A suboption could be implemented to provide a higher level of phosphorus removal or to provide seasonal land disposal should it be necessary to reduce phosphorus loadings to Long Lake at a future date. Suboption A-3 would also provide chlorine and ammonia removal, two toxicants of particular concern in the river. This information was summarized and presented at the EIS public hearing held on May 14, 1981 in Spokane. The county's preferred alternative, identified at the May 14 public hearing, is Alternative A. EPA concurs with the county's selection of Alternative A as the most cost-effective alternative and recommends, with certain conditions, that construction grant funds be awarded for those portions of the project which are on the state priority list and are eligible for state and federal funding. However, consideration should also be given to Suboption A-3 following DOE's review of the effects of seasonal phosphorus removal and following review of monitoring data on chlorine and ammonia levels.

There are, however, issues which need to be resolved to complete development of the 20-year project. One is the uncertainty of the impacts on the Spokane River and Long Lake of increasing the total effluent load beyond 44 million gallons per day (MGD). Because of this, and existing conditions, EPA is recommending the following condition be placed on any Section 201 construction grant approved by EPA for this project. The grant condition requires that the state and county continue to monitor the Spokane River and Long Lake to quantitatively determine the impacts of the project and to allow them to ascertain which of the suboptions or combinations of suboptions will best protect the water quality and thus the beneficial uses of the river and lake.

1. *Spokane County agrees to:*

   A. *Continue ongoing water quality monitoring of the Spokane River in order to complete and later verify the waste load allocation for toxics, oxygen demanding substances, and nutrients that may alter the eutrophic state of Long Lake; and*

   B. *in conjunction with the Washington Department of Ecology, conduct bioassays to establish maximum concentrations of chlorine and un-ionized ammonia allowable when considering the fishery resources in the Spokane River near the City of Spokane's discharge.*

   This action is necessary to provide for the attainment and preservation of Spokane River water quality that will be consistent with beneficial uses.

Secondly, in order to comply with the National Historic Preservation Act, the following condition is recommended to be placed on any future grant relating to this project.

2. *Spokane County must complete an archeological/historic records search and field survey of all selected wastewater facilities sites, including interceptor routes, pump station locations and equalization basin sites. The research and surveys should be conducted by a qualified professional archeologist. The findings of the survey must be submitted to the Washington State Historic Preservation Office and the Advisory Council on Historic Preservation for their review and determination of effect.*

EPA recommends that an agency or agencies be appointed to oversee implementation of the water quality control strategies identified in the Spokane County water quality management plan. All necessary measures should be enacted to protect the aquifer from nonpoint sources of pollution due to additional dense urban development over the Spokane Valley Aquifer.

EPA construction grant regulations allow EPA to provide up to 75 percent of the cost of eligible portions of sewage treatment projects. At the present time, only the North Spokane interceptor is on the State of Washington priority list for potential federal grant funds. The remainder of the project must be paid for by state and local funds. If the county decides at a future date to request federal funds for other parts of the project, a determination for further environmental analysis would need to be made by EPA for compliance with the National Environmental Policy Act. Future federal funding, however, is uncertain.

The Final EIS contains certain sections of the Draft EIS which have been rewritten to reflect information and comments received after release of the Draft EIS. These sections include:

1. Impacts on Surface Water Quality
2. Consistency With the County's Generalized Land Use Plan
3. Project Economics
4. Relationship of the CWMP and the County 208 Plan

Also included are chapters describing the county's proposed action, EPA's recommended action and responses to comments received on the Draft EIS. Upon publication of the Final EIS, there will be a 30-day public comment period. On or after September 15, 1981, the EPA Regional Administrator will issue a Record of Decision making known his final determination on the award of a Section 201 construction grant.

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EXECUTIVE SUMMARY

Project Background and Objectives

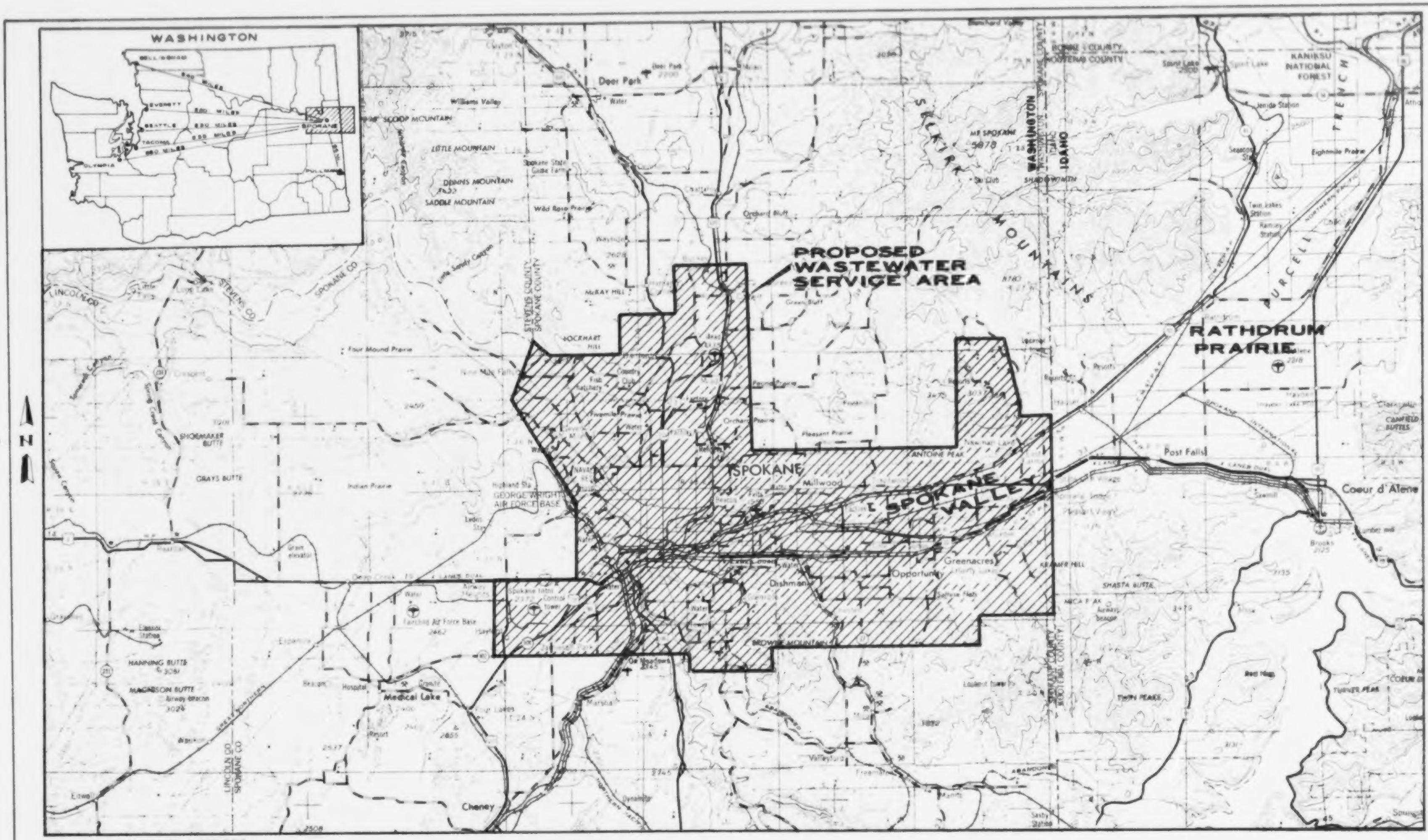
The City of Spokane and its urban periphery are located astride the Spokane River just a few miles west of the Idaho-Washington state line (Figure 1). The urban area has a population of approximately 290,000 people and has shown a rapid increase in the last 10 years. This large population overlies a glaciofluvial outwash plain of coarse sands and gravels which transports a large underground flow of water draining from the Spokane River basin.

The cities of northern Idaho and the City of Spokane have relied on this aquifer as their primary source of drinking water for many years. Most of the wastewater generated within the city limits of Couer d'Alene and Spokane have been collected, treated, and discharged to the Spokane River. Residents of outlying areas have relied upon on-site disposal systems or small community disposal systems that discharge wastes through ponds and drainfields over the aquifer.

As the population of the area has grown the waste discharges have raised public health concerns both for the river and the aquifer. Under provisions of Section 208 of the Clean Water Act, Spokane County investigated the water quality conditions of the Spokane Valley aquifer and the factors that affect its water quality conditions. The study findings (Esvelt 1978) indicate that the rapid urbanization and proliferation of on-site waste disposal systems over the aquifer are causing the quality of the groundwater to deteriorate. The 208 report has been conditionally approved by EPA, pending identification of an implementing agency. The Spokane County Board of County Commissioners has accepted the 208 plan, but has not adopted its findings or recommendations as policy.

In order to seek a remedy for the sanitary waste disposal problems over the aquifer, Spokane County embarked on a wastewater facilities planning effort in 1979 for the urbanizing areas around Spokane (Figure 2), and sought grant aid from EPA under Section 201 of the Clean Water Act. The county's Comprehensive Wastewater Management Plan (CWMP) was developed simultaneously with a Washington Department of Ecology (DOE)-funded investigation into the sources of and potential control measures for nutrient loads affecting the water quality of Long Lake, an impoundment on the Spokane River below Spokane.

The CWMP has been prepared for the county by Economic and Engineering Services, Inc. of Olympia, Washington. The document is designed to meet the wastewater planning requirements of a Step 1 facilities plan under Section 201 of the


WASHINGTON
BELLINGHAM
EVERETT
SEATTLE
TACOMA
OLYMPIA
SPOKANE
PULLMAN
PROPOSED
WASTEWATER
SERVICE AREA
SELKIRK MOUNTAINS
RATHDRUM
PRAIRIE
PURCELL
TRENCH
KANIKSU
NATIONAL
FOREST
WASHINGTON
IDAHO
SPOKANE
SPOKANE VALLEY
Millwood
Greenacres
Opportunity
Dishman
Post Falls
Coeur d'Alene
Deer Park
Medical Lake
Cheney
GEORGE WRIGHT AIR FORCE BASE
Fairchild Air Force Base
Mt SPOKANE 5878
SCOOP MOUNTAIN
LITTLE MOUNTAIN
DENNIS MOUNTAIN
SADDLE MOUNTAIN
GRAYS BUTTE
SHOEMAKER BUTTE
HANNING BUTTE
MAGNUSON BUTTE
SHASTA BUTTE
KRAMER HILL
TWIN PEAKS
ANTOINE PEAK
BROWNE MOUNTAIN
Four Mound Prairie
Indian Prairie
STEVENS COUNTY
SPOKANE COUNTY
LINCOLN CO
SPOKANE CO
STEVENS CO
BONNER COUNTY
KOOTENAI COUNTY
N
0
10
MILES

BASE FROM USGS 1:250,000
SPOKANE QUAD

FIGURE 1. REGIONAL SETTING

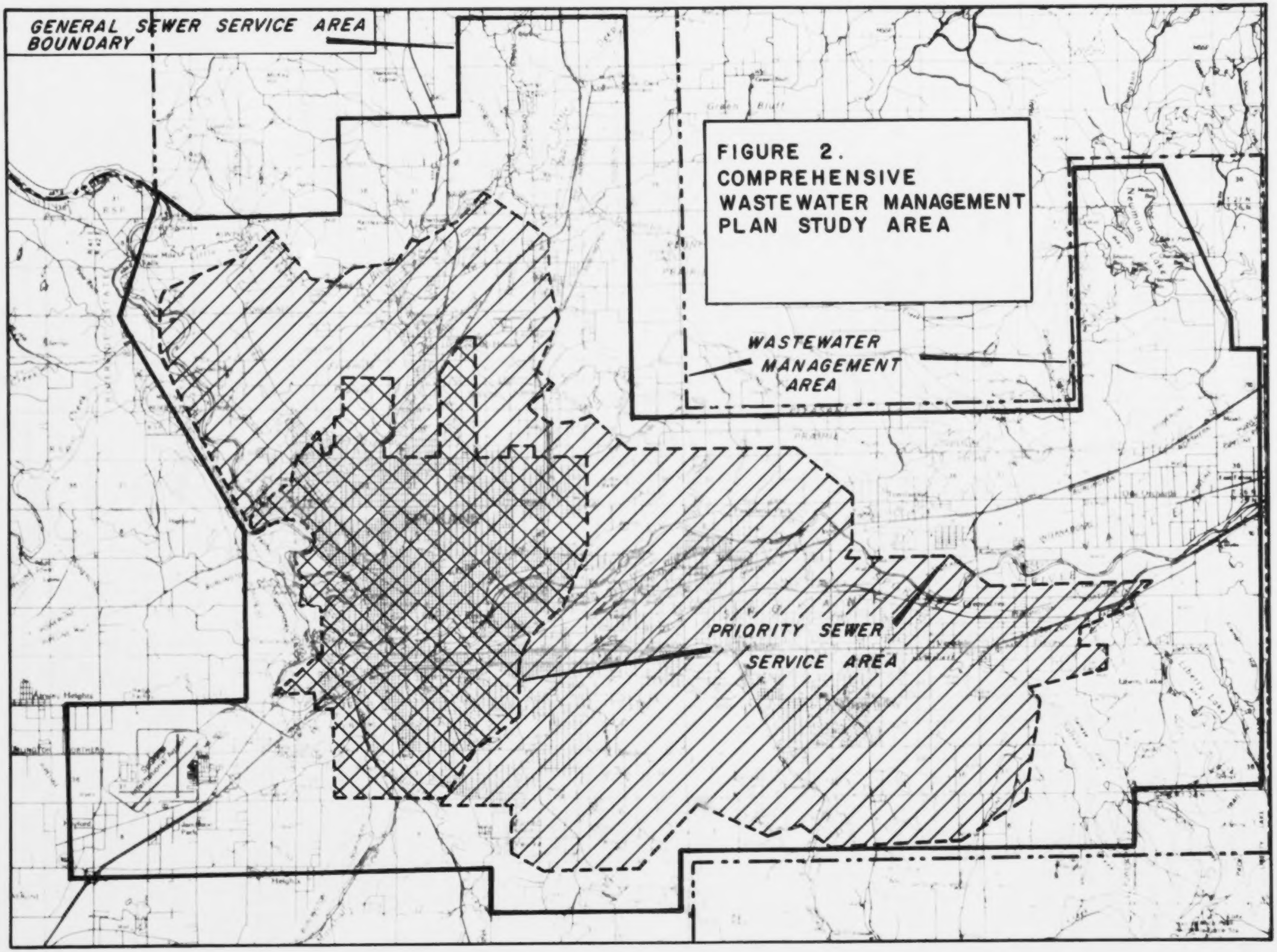

GENERAL SEWER SERVICE AREA BOUNDARY
WASTEWATER MANAGEMENT AREA
PRIORITY SEWER SERVICE AREA
Green Bluff
Newman Lake
Liberty Lake

FIGURE 2.
COMPREHENSIVE
WASTEWATER MANAGEMENT
PLAN STUDY AREA

Clean Water Act, the state's General Sewer Plan (GSP) requirements under WAC 173-240, and the state's Sewerage General Plan (GSP) requirements under RCW 36.94. The plan has assessed the future wastewater management needs of the Spokane area, identified specific facilities needed to meet wastewater service demands, and described a management program to implement a coordinated city-county wastewater system.

EPA has prepared a Draft Environmental Impact Statement (EIS) to describe the possible environmental consequences of implementing the CWMP, as required by the National Environmental Policy Act (NEPA). That document was issued to the public in February 1981. The EIS is also being used to meet the environmental analysis requirements of Washington's State Environmental Policy Act (SEPA). This Final EIS has been prepared to respond to written and oral comments submitted on the Draft EIS.

Project Alternatives

Alternatives Considered in the CWMP

The CWMP investigated seven project alternatives, six that would provide wastewater facilities for the urbanizing unincorporated areas around the City of Spokane, and the "no-action" alternative. The six action alternatives were designated A through F and provided various means of transporting, treating, and disposing of wastewater from North Spokane, Spokane Valley, Moran Prairie, West Plains, Liberty Lake, and Newman Lake.

Alternative A, which has been selected by the county as its preferred action pending completion of the EIS, includes collection and transport of all county wastewater to the City of Spokane's central wastewater treatment plant via the city's interceptor system. Wastewater storage and equalization basins would be used to regulate county flows into the city interceptor system in order to avoid increasing combined sewer overflows (CSOs) which occur during wet weather. The city's combined sanitary and stormwater runoff interceptor system is overtaxed during rain or snowmelt periods; this causes discharges of untreated wastes to the Spokane River. Alternative A has a projected cost of $81.6 million.

Alternative B was similar to A, but waste flows collected from the Spokane Valley, Moran Prairie, Liberty Lake, and Newman Lake areas would be treated at a new treatment plant at Felts Field, on the eastern edge of Spokane. The treated wastewater would be discharged to the Spokane River upstream from the city. The principal drawbacks of this alternative are that it would cost $27 million more than A and would discharge wastes to the river upstream from the city, in an area that recharges the city's underground water supply.

Alternative C was also similar to A, but wastewater from the North Spokane area would be treated separately and disposed of to the land northwest of Spokane. The land disposal method contemplated was rapid infiltration. The proposed infiltration area was along Rutter Parkway, within the boundaries of the sole source aquifer designation made by EPA. Therefore, EPA found that rapid infiltration disposal was not acceptable. The county has indicated that other methods of land disposal in that area (irrigation, overland flow) are not economical; they also indicate that there are no rapid infiltration sites in that area that are off the aquifer. Alternative C would cost about $6 million more than A.

Alternative D proposed separate treatment for both North Spokane and Spokane Valley as described in Alternatives B and C. The only county flows feeding into the existing city system would come from West Plains. This alternative has been rejected by the county because of the drawbacks listed for both Alternatives B and C. In addition, Alternative D would cost about $36 million more than A.

Alternative E proposed to transport wastewater flows from Spokane Valley, Moran Prairie, Liberty Lake, and Newman Lake to the North Spokane area to combine with a North Spokane land disposal facility. It would be located in the Rutter Parkway area and would use rapid infiltration as the disposal mode. As with Alternative C, this disposal mode is not acceptable to EPA over the sole source Spokane Valley Aquifer. This and the project's high cost ($33 million in excess of A) led to the alternative's rejection.

Alternative F would transport both city and county waste flows, after treatment, to a rapid infiltration disposal area adjacent to the Spokane River in Stevens County. No waste discharges to the Spokane River would occur. This would have a very positive influence on Spokane River water quality, but would cost $41 million more than Alternative A and was considered too expensive.

The no-action option, which would provide no new wastewater facilities for present or future residents of the study area, was rejected because it would do nothing to alleviate the public health threat created by on-site waste disposal practices over the Spokane Valley Aquifer.

Alternative Preferred by Spokane County

As mentioned earlier, Spokane County has tentatively identified Alternative A as its preferred wastewater facilities plan. This was the recommendation of the facilities plan engineers. Final county approval will not occur until the environmental impact review process is complete and the CWMP has been accepted as complete by DOE.

Alternative A involves construction of trunk interceptors serving Spokane Valley, Moran Prairie, North Spokane, and eventually West Plains. Waste flows from Liberty Lake and Newman Lake would eventually feed into the valley interceptor. Raw wastewater storage basins would be constructed adjacent to the valley interceptor near Carnahan and 8th Avenue and near the North Spokane interceptor at the Ledgerwood Lagoons. These basins would be used for both flow equalization and storage during wet weather. The valley interceptor would connect into the city's existing interceptor system near Havana and 8th Avenue. The North Spokane interceptor would connect to the city system near Rowan and Ash Streets.

The facilities were planned in two stages, with the emphasis being to serve a priority sewer service area (PSSA) outlined in the CWMP. In the first phase (1982-1992), the valley interceptor would consist of four major branches, serving Moran Prairie, Pasadena Park, Opportunity, and the central portion of Spokane Valley along the Chicago-Milwaukee Railroad line as far east as Sullivan Road. The North Spokane interceptor system would also be constructed. This would increase the waste flows to the Spokane treatment plant from its present 32 million gallons per day (MGD), to approximately 44 MGD. Wastewater treatment at the plant would remain as at present, unless DOE allows phosphorus removal to become seasonal rather than year-round. Approximately 90,000 county residents would be served by Phase I.

During the second phase (1992-2002), the valley interceptors would be extended to Liberty Lake, Trentwood and the urbanized area generally east of Locust Road between the river and Sprague Avenue. The Liberty Lake treatment plant would be abandoned and its flows would be fed into the valley interceptor. West Plains would be sewered directly to the Spokane sewage treatment plant (STP) in Phase II. Total flows through the Spokane plant would reach 62 MGD by 2002 and a county population of 176,050 would be served.

The facilities plan recommendation is to finance the local share of the project construction costs by issuing general obligation bonds. The entire county would be assessed at an estimated rate of 52 cents per $1,000 of assessed valuation to repay the bonds. This would repay the local share of the Phase I construction costs, estimated to be $26,486,600. This assumes that federal and state grants totaling $20,000,000 would be available to pay the rest of the $46,486,600 total construction cost. Payment for treatment capacity in the Spokane STP and the Spokane interceptor system ($4,001,000) would be funded through monthly user fees, estimated to be about $8.56 per month (Economic and Engineering Services, Inc. 1980a). Local collection systems would be financed by formation of utility local improvement districts (ULIDs) and assessing residents for capital and operation and maintenance costs. Collection system costs will vary considerably, depending upon terrain and development density, with total costs estimated in the range of $3,200 to $6,600 per dwelling (Economic and Engineering Services, Inc. 1980a).

While the financing scheme has not yet been finalized, it appears that $20,000,000 in federal and state grants may not be available for the county's recommended Phase I. The state draft priority list for EPA construction grant funds lists the North Spokane interceptor for $1.23 million in fiscal year 1985 or 1986. Therefore, the county may decide to embark on a scaled-down version of Phase I. Councilmanic bonds may be used for initial funding. The scope and content of a smaller Phase I has not been determined to date.

Project Suboptions

After the Draft CWMP and Draft EIS had been published, DOE issued its Phase I waste load allocation study. This study analyzed the status of phosphorus loads in the Spokane River and their effects on Long Lake. A model of the relationship between phosphorus loads entering Long Lake and the chlorophyll a levels in the lake was developed and used to generate several waste load allocation scenarios. Initial interpretations of the report were that added phosphorus loads to the river would exceed levels necessary to maintain Long Lake chlorophyll a levels at 10 μg/l, a level described as indicative of eutrophic conditions (Washington DOE 1981). Because the engineers' recommended Alternative A would increase river phosphorus levels, DOE requested that several suboptions to A be investigated; these could be initiated to relieve water quality problems in the river and lake:

Suboption A-1. Modify Alternative A by limiting phosphorus removal to either a 5- or 7-month period. This would reduce operation and maintenance costs rather than improve water quality.

Suboption A-2. Store wastewater flows in excess of current levels during the 7-month warm weather period. Stored effluent would be used to irrigate crops in the West Plains area or to generate power during the 5 winter months. There would be no increase in the level of phosphorus discharged from the Spokane STP during the principal algal growing season.

Suboption A-3. Increase phosphorus removal efficiency by adding effluent filtration. This would keep phosphorus discharges down as flows into the plant increased. The addition of ammonia removal and dechlorination were also considered in this suboption, in order to avoid exceeding EPA recommended concentrations of chlorine and ammonia in the river.

Suboption A-4. Improvement of water quality conditions in Long Lake through mechanical or chemical treatment of the lake waters, or changing the depth of the lake's outlet.

Suboption A-5. Use of various water quality management techniques, exclusive of wastewater treatment plants, to limit the inflow of pollutants to the Spokane River. This might include a ban on phosphorus soaps, improved street cleaning, improved CSO and urban runoff control, and transport of all wastewaters downstream of Long Lake.

While none of these suboptions has been recommended to date, they could be initiated at a later date if it appears the preferred alternative would cause unacceptable water quality impacts in the Spokane River or Long Lake.

Impacts of the County's Preferred Alternative

If Alternative A is implemented as planned, a number of significant impacts are likely to occur. These impacts are summarized below:

- the Liberty Lake waste discharge upstream from the City of Spokane will eventually be eliminated
- interim and on-site waste disposal systems serving approximately 87,000 existing residents over the Spokane Valley Aquifer will eventually be eliminated
- will provide wastewater service to approximately 89,000 new area residents by 2002
- will add approximately 12,100 new urban acres to the Spokane area by 2002
- anticipates servicing a population well in excess of the EPA-state approved total for Spokane County
- projected phosphorus loads discharged to the Spokane River from all sources will exceed the DOE recommended total loading (507 pounds per day) to Long Lake before 1992
- algal production in the Spokane River and Long Lake below the City of Spokane waste discharge will increase as the level of nutrients in the river increases
- chlorine levels in the effluent plume and in the Spokane River below the waste discharge will exceed EPA 24-hour criteria for protection of freshwater biota under low river flow conditions in summer months; the anticipated concentrations could have a major impact on the entire fish productivity of waters below the outfall
- un-ionized ammonia and heavy metal concentrations in the effluent plume of the Spokane waste discharge will exceed EPA 24-hour criteria for protection of freshwater biota under low river flows in summer months; these concentrations are likely to be detrimental to those early life stages of fish that are relatively immobile (eggs, fry) and, therefore, unable to move away from the plume

- odor and aesthetic impacts could affect residential land uses surrounding the proposed Spokane Valley wastewater equalization basin
- county residents hooking into the new wastewater system will face additional costs; this will include a collection system hookup fee of $300-$1,300, a ULID assessment to pay for the collection system averaging $366 per year (will vary considerably with dwelling density), and a monthly user fee estimated to be $8.56
- as growth occurs, urban runoff over the Spokane Valley Aquifer will increase
- chemical and energy use for wastewater treatment will increase significantly due to increased volumes of influent
- carbon monoxide levels will increase along major North Spokane and Spokane Valley transportation corridors

EPA has identified Alternative F as the environmentally preferable option, but its costs are too high when cost-effective suboptions to the county's preferred alternative are available that would protect both surface and groundwater.

EPA Recommended Action

EPA concurs that Alternative A is the most cost-effective wastewater facilities alternative for Spokane County. While it has not been identified as the most environmentally preferable alternative, we do not feel that the benefits associated with Alternative F justify the added costs. With the initiation of the monitoring and response plan programs, Alternative A provides an opportunity for an environmentally acceptable solution at significant cost savings.

EPA is proposing to place two conditions on this decision. The two conditions are as follows:

- The State of Washington and the City and County of Spokane should continue general water quality monitoring in the Spokane River and Long Lake in order to determine when (or if) any of the Alternative A suboptions should be implemented. In addition, ammonia and chlorine concentrations upstream and downstream from the waste discharge, and in the effluent plume, should be regularly monitored to more fully assess impacts on the Spokane River fishery. This is consistent with DOE's recent determination that dechlorination and ammonia control must be implemented by June 1983 unless monitoring data indicate it is not necessary. In the event that water quality problems are identified, the City and County of Spokane should take all necessary steps to eliminate these problems.

- Spokane County must complete an archeological records search and field survey of all proposed facilities sites in order to comply with the National Historic Preservation Act.

In addition to these grant conditions, EPA is strongly recommending the following:

- If the phasing of the project is determined to be other than that recommended in the CWMP, the water quality impacts should be carefully evaluated.
- Spokane city and county agencies should proceed with implementation of the nonpoint source water pollution control strategies identified in the county 208 plan.

A variety of other impact mitigation measures identified in the Draft EIS and reiterated at the end of Chapter 3 in this Final EIS should also be pursued in order to minimize the potential impacts of Spokane County's preferred wastewater facilities plan.

Remaining EIS Process

The Spokane County CWMP Draft EIS was issued for public review in February 1981. A public hearing was held on the document in Spokane on May 14, 1981. All comments received on the Draft EIS prior to May 29, 1981 have been responded to in this Final EIS. Comments on the Final EIS received prior to the close of the comment period will be considered by EPA before taking action on further grant awards to Spokane County. On or after September 15, 1981, the EPA Region 10 Regional Administrator will issue a Record of Decision making known his final determination on the grant award.

Chapter 1

SPOKANE COUNTY'S PROPOSED ACTION

Introduction

The Spokane County CWMP analyzed seven basic options, including "no action", to provide wastewater service to the unincorporated but urbanizing portions of Spokane County surrounding the City of Spokane. From this list of seven, the engineering consultants to the county eventually recommended Alternative A. This plan and recommendation are detailed in the *Draft Spokane County 201 Comprehensive Wastewater Management Plan* (CWMP) published in December 1980 (Economic and Engineering Services, Inc. 1980a). The CWMP and its recommendation were accepted and endorsed with certain provisions by the Board of County Commissioners in December 1980. This chapter briefly describes the county's preferred option and a series of suboptions that could be incorporated into the plan in the future if water quality conditions in the Spokane River and Long Lake downstream from the city treatment plant so dictate.

Recommended Comprehensive Wastewater Management Plan

The following description of the recommended CWMP has been extracted and slightly modified from Economic and Engineering Services, Inc. (1980b).

The recommended plan for the CWMP is Alternative A. Wastewater flows from areas outside of Spokane would be conveyed to the existing city treatment plant through the city's trunk and interceptor system. Secondary treatment, plus phosphorus removal, would be provided at the treatment plant and discharge would be to the Spokane River. Interception of wastewater flows from the surrounding North Spokane, Spokane Valley, Moran Prairie, and West Plains areas would be accomplished in two phases. Phase I would occur in the years 1982-1992 and Phase II in 1992-2002. These dates are approximations only.

Wet weather storage and equalizing basins would be constructed to accommodate flows from North Spokane and Spokane Valley/Moran Prairie. Wet weather storage of flows would be necessary during the initial phases of the city's combined sewer overflow (CSO) abatement program, because during severe storms all available treatment and conveyance capacity in the system is needed to handle flows from the city. In addition to providing wet weather storage for flows from areas outside the city, during the separation program's implementation period, the basins would allow the dampening of daily variations in dry weather flows from these areas. This flow equalization would have the effect of allowing a reduction in the size of facilities designed to handle peak flow rates and would increase the effective capacity of the city's existing treatment and conveyance facilities. A significant long-term effect of equalization would be to prolong the life of the existing plant site.

North Spokane

Flows from North Spokane would be concentrated at a point near Hawthorne Road and pumped out of the North Spokane drainage area into the City of Spokane system. Initially, the point at which North Spokane wastewater would enter the city system would be approximately at Rowan and Milton Roads. The existing Lidgerwood treatment lagoon would be converted to the storage and equalizing lagoon for the North Spokane area.

Wastewater service to the Indian Trails area is being currently undertaken by the City of Spokane as an extension of their system. Indian Trails area flows will be conveyed to the city's Assembly Street trunk system by a gravity interceptor currently planned by the city. Complete service to the Indian Trails area will require the construction of pump stations and force mains so that areas south and west of the city interceptor can be served. It is assumed that sewer service to this area will continue to be the city's responsibility.

Spokane Valley

Flows from Spokane Valley would be concentrated at the east city limits north of Sprague Avenue and would enter the city interceptor system through a large trunk sewer at Harston and Havana. Spokane Valley would be served by a gravity system with pumping being used only in isolated lower areas. The backbone of the valley system would be a corridor interceptor line which would generally parallel Sprague Avenue east from the city limits to the Dishman Mica Road at which point the interceptor would follow the abandoned Milwaukee Railroad right-of-way to Liberty Lake.

Storage and equalization for Spokane Valley and Moran Prairie would be provided at joint basin facilities. Phase I basin facilities and pump station would pump wastewater into the city system. Phase II improvements would include an additional 45-million-gallon storage capacity to accommodate the addition of customers from the valley as well as the connection of Liberty Lake and Newman Lake.

Phase II interceptors would extend to pick up flows from Liberty Lake and Newman Lake. Additional interceptors would also be constructed to the east, north and south during this phase.

Moran Prairie

Service in the Moran Prairie area would be provided by constructing a gravity interceptor which would begin at the point of concentration south of the city and connect to the main corridor interceptor serving Spokane Valley at a point just east of the city limits.

Liberty and Newman Lakes

Liberty Lake would be initially served on an interim basis by a treatment plant using secondary treatment with discharge into the Spokane River. Treatment for phosphorus removal would not be required until daily flows to the plant exceeded 800,000 gallons. As part of the second phase facility construction, the corridor interceptor would be extended to Liberty Lake in lieu of expanding the 1 MGD plant. At that time, capacity in the interceptor would be available for all flows from the Liberty Lake and Newman Lake area. Once interceptor capacity is available, the Newman Lake facilities plan could be implemented.

West Plains

Service to the presently sparsely populated West Plains area would be deferred to the second phase when the projected population density would make viable the construction of interceptor lines which would serve the Spokane Airport and Airway Heights areas. The flows would be conveyed directly to the Spokane treatment plant.

Phasing

Although the above paragraphs describe the plan as preferred by the county, this should be tempered by the realities of funding. It is possible that the construction of interceptors and equalization basins would be accomplished in phases as money became available. The project engineers had not developed nor included in the CWMP a phasing scheme beyond that described above. If finances dictate development in smaller segments, the Spokane Board of County Commissioners will determine which elements of the project are constructed first. Judgments on which parts of the Priority Sewer Service Area (PSSA) are to be sewered first will be influenced by which areas show the keenest interest in forming ULIDs for the collection systems. The implications of various phasing schemes should be closely analyzed by the county and DOE in terms of their impact on aquifer water quality. Changes in the phasing of the CWMP may have significant effects on water quality.

After reviewing the CWMP and the CWMP Draft Environmental Impact Statement (EIS) (U. S. Environmental Protection Agency [EPA] 1981), the Washington Department of Ecology (DOE) took several actions that could affect phasing of the proposed project. In a letter of comment on the CWMP, DOE stated that it "cannot support the requirement that the Liberty Lake Sewer District hook up to a county interceptor unless one of the following conditions is fulfilled:

a. The sewage treatment plant (STP) does not meet its National Pollutant Discharge Elimination System (NPDES) permit effluent limits.

b. The STP effluent is proven to have an adverse effect on the Spokane River fisheries.

c. The STP effluent causes unacceptable deterioration of the Spokane-Rathdrum Aquifer" (Washington DOE 1981a).

It is therefore possible that the phasing in of Liberty Lake flows might not occur as described in the county's preferred project.

The DOE also requested that the project engineers develop a series of suboptions to Alternative A that could respond to possible water quality changes in the Spokane River created by the project in its first phase. These suboptions were subsequently described by Economic and Engineering Services, Inc., (1980), in a supplemental report. Spokane County and the City of Spokane could choose to implement one of these suboptions in the future in order to meet changes in the city treatment plant's NPDES requirements.

Project Suboptions

The following suboptions were developed by Economic and Engineering Services, Inc., after publication of the Draft EIS; therefore, they were not discussed in the Draft EIS. The general nature of the suboptions and their potential impacts were described at the EIS public hearing held in Spokane on May 14, 1981. A summary report (Economic and Engineering Services, Inc. 1980) describing the suboptions was also made available to persons attending the public hearing. Each of the options and its potential impacts is reviewed below.

Suboption A-1

Suboption A-1 would include the same interceptors and equalization basins as Alternative A. Wastewater treatment would also remain the same with one exception: treatment for phosphorus removal would be discontinued in the cooler winter months. Economic and Engineering Services, Inc., analyzed both a 5-month and 7-month cessation of phosphorus treatment (October to March or October to May). During the summer months phosphorus removal would be continued at an efficiency rate capable of meeting DOE requirements.

Most of the impacts of Suboption A-1 would be similar to those of Alternative A. The significant differences would occur in water quality and costs of treatment. The water quality impacts are described in Chapter 2. If phosphorus removal is halted for 5 months, annual operation and maintenance costs at the Spokane treatment plant would be reduced $565,000 per year in 2002. With a 7-month cessation, the annual cost savings in 2002 was estimated to be $792,000. No increase in capital costs would occur from Suboption A-1. User fees for county residents would be $.27 and $.38 lower per month by 2002 for the 5- and 7-month halt in phosphorus removal, respectively (Economic and Engineering Services, Inc. 1980).

The change in phosphorus treatment would also create a savings in chemicals and indirectly in energy consumption. Alum or ferric chloride and polymer are added to the wastewater to remove phosphorus. The amount of this material consumed annually would be significantly reduced. The energy involved in mining, manufacturing and transporting the chemicals would be saved.

Suboption A-2

Suboption A-2 involves seasonal storage of treated wastewater. Again, interceptors and equalization basins would be used to serve the county areas just as in Alternative A. During the 7-month warm weather period, however, all treated effluent above current levels would be pumped across the Spokane River to the south and stored in a reservoir constructed in Old Trails Canyon. This would maintain discharge to the Spokane River at present levels during the peak recreational and algal growth seasons. The stored secondary treated effluent would subsequently be distributed for crop irrigation in the West Plains area or returned to the river through an electrical generator during the five cold months. The major impacts of this suboption are listed:

- Would inundate an unspecified number of acres of open space in Old Trails Canyon west of Spokane.
- Would provide an agricultural water source in an area currently lacking in water supplies (irrigation option).
- Would generate between 1,000 and 2,000 Kwh of electricity from return flows to the river (power generation option).
- Would use an unspecified amount of electricity to pump effluent up to the storage area (more than generated by return flows).
- Capital expenditures of $12,919,000 if storage and power generation implemented.
- Capital cost of $40,210,000 if storage and crop irrigation implemented.
- Increase in annual operation and maintenance costs of between $281,900 and $320,400.
- Increase in monthly user fees of $.28 (power generation) or $.52 (irrigation reuse) for the average service area resident.

The water quality impacts of Suboption A-2 are described in Chapter 2.

Suboption A-3

Suboption A-3 would involve modifications of treatment processes at the Spokane treatment plant to meet water quality criteria for the Spokane River and Long Lake. Three separate treatment modifications were investigated by Economic and Engineering Services, Inc. (1980). Effluent filtration was considered as a means to improve phosphorus removal efficiency beyond the current 85-90 percent removal level. Removal efficiencies of 92.1 percent in 1992 and 94.4 percent in 2002 were investigated. This would reduce effluent phosphorus concentrations to 0.51 and 0.36 mg/l, respectively.

In the event that residual chlorine and ammonia concentrations in the treatment plant's discharge reached toxic levels, Suboption A-3 would add dechlorination and ammonia removal capabilities. Residual chlorine would be reduced from about 1 mg/l to nondetectable levels using sulfonator equipment. During summer, ammonia would be reduced to 2.5 mg/l in the effluent through breakpoint chlorination.

The principal impacts of Suboption A-3 are in the areas of cost and water quality. The water quality impacts are discussed in Chapter 2. In terms of cost, the effluent filtration would require $10,900,000 in capital expenditures initially. An additional $2,920,000 would have to be spent annually (by 2002) to operate and maintain the added treatment. This equates to a $1.57 increase in monthly user fees. The dechlorination equipment would cost $360,000 initially, with a $50,000 per year operation and maintenance cost in the year 2002. The monthly user fee increase would be $.03. Finally, ammonia removal by breakpoint chlorination would have a capital cost of $1,000,000, an annual operation and maintenance cost of $177,000, and a monthly user fee increase of $.10 (Economic and Engineering Services, Inc. 1980).

Suboption A-4

Suboption A-4 has not been developed in great depth by the project engineers. Its general concept is to solve water quality problems in Long Lake by managing the lake rather than changing wastewater treatment practices. Three possibilities were briefly considered, including chemical treatment of the lake, mechanical aeration of the lake, and alteration of the lake's outlet. Chemical treatment could involve periodic dosing with copper sulfate to control the growth of algae. The idea behind changing the lake's outlet structure is to improve circulation of waters that become anoxic in the deeper parts of the lake. Little work has been done beyond listing these lake management proposals.

The impacts of these management options cannot be listed without more specific project definition. Economic and Engineering Services, Inc., (1980) estimated that chemical treatment of the lake would cost $135,000 a year in operation and maintenance. This equated to a $.06 per month increase in user fees. They also estimated that modification of the lake outlet would have a capital cost of $1,680,000, an annual operation and maintenance cost of $2,000, and a monthly user cost increase of $.02.

Suboption A-5

Suboption A-5 has also been presented in only general terms by the project engineers. It is a collection of various water quality management techniques that could aid in controlling pollutant levels in the Spokane River. The range of possibilities described in Economic and Engineering Services, Inc., (1980) includes a phosphate detergent ban, improved street sweeping, improved urban runoff control, connection of northern Idaho wastewater systems to the Spokane system, and transport of all Spokane area effluent to a discharge point below Long Lake.

Rough cost estimates were prepared for a number of these management techniques, but details of location or operational procedures were not developed. The use of a phosphate soap ban to reduce influent phosphorus loading was rejected by the project engineers after determining that local residents would suffer a net financial loss due to increased use of bleach and water softeners and decreased clothing life (Economic and Engineering Services, Inc. 1980). Piping effluent to a point below Long Lake had an estimated capital cost of $95 million, an extremely expensive undertaking. Interception and transport of the Coeur d'Alene and Post Falls, Idaho wastewaters was estimated to cost $14 million.

The concepts of increasing data collection and water quality monitoring were also presented under Suboption A-5. The idea would be to monitor the Spokane River and Long Lake systems as Alternative A is being implemented. The additional information could subsequently be used to determine whether any of Suboptions A-1 through A-4 should be implemented to reduce the impacts of the continuing wastewater discharge from the Spokane treatment plant. Continued monitoring of the Spokane River and Long Lake is included as a condition of EPA's recommended approval.

Chapter 2

EXPANDED DISCUSSION OF DRAFT EIS ISSUES

Introduction

Public comment on the Draft EIS focused on several key issues. The economic and surface water quality impacts of the proposed alternatives were two of the major concerns. The relationship of the CWMP to other water quality management planning and land use planning efforts was also the source of many questions. The following sections of this chapter update and expand those sections of the Draft EIS receiving considerable comment.

Spokane River Water Quality

Introduction

EPA's CWMP Draft EIS presented a detailed water quality impact analysis of seven project alternatives. The analysis was based on projected wastewater flow and quality data provided by the facilities plan engineers, and on river flow and quality data available from the U. S. Geological Survey Storet system. Waste discharges at Liberty Lake, Felts Field and the existing Spokane treatment plant were described. Pollutant loading and concentration increases were predicted for each alternative at mean river flows.

Since publication of the Draft EIS, the Washington DOE has released the results of Phase I of its Spokane River waste load allocation study (Washington DOE 1981). The report was prepared for DOE by the URS Company of Seattle, Washington. The report includes a detailed description of existing water quality conditions, a description of the major pollutant sources, and a listing of criteria for protection of the river's beneficial uses. A model was developed for use in making waste load allocations. It initially consists of a simple steady-state river mass-balance model plus a linear regression between phosphorus and mean seasonal chlorophyll *a* in Long Lake. The report indicates that under modeled conditions, future phosphorus loading will result in Long Lake chlorophyll *a* concentrations greater than 10 μg/l. The report states that 10 μg/l is indicative of eutrophic conditions in the lake. Several allocation scenarios are presented which would reduce phosphorus loading to acceptable levels.

Because the waste load allocation study presented new water quality data and there were a significant number of public comments on the water quality section of the Draft EIS, an expanded water quality analysis is included in the Final EIS. This expanded analysis uses revised effluent quality data provided by DOE, and analyzes impacts at extreme low flow conditions in the river below the Spokane treatment plant. This presents a more conservative analysis of impacts. It also presents a phosphorus allocation analysis based on recent DOE revisions to the waste load allocation study. Because DOE has not established a specific daily phosphorus loading limit for the Spokane plant, it has not been possible to indicate at what point the Alternative A discharge might place an unacceptable phosphorus load on Long Lake.

The revised water quality analysis has focused on the county's preferred Alternative A, the "no-action" alternative and a number of suboptions to Alternative A developed since publication of the Draft EIS (see Chapter 1 for a description of the suboptions). The other alternatives have been dropped from consideration by the county.

Existing Surface Water Quality

There is considerable public and agency concern over water quality in the Spokane River and Long Lake, especially with regard to concentrations of algae, phosphorus, un-ionized ammonia, and chlorine. Current data indicate (Table 2-1) that Spokane River water quality between Post Falls, Idaho and Long Lake is generally satisfactory for the support of beneficial uses of the river, although several parameters exceed recently revised EPA criteria for toxic pollutants (*Federal Register*, November 28, 1980) and the State of Washington water quality standards (Table 2-2).

Standards and Criteria

Washington has designated the Spokane River from its mouth to the Idaho border as Class A. In this classification, quantitative standards are listed for dissolved oxygen (DO) fecal coliforms, turbidity, and pH. Toxic or deleterious material concentrations are required to be less than those of public health significance or that cause acute or chronic toxic conditions to the aquatic biota or which may adversely affect any beneficial water use. Toxic or deleterious concentrations are determined in consideration of water quality criteria published by EPA and/or other relevant information.

Table 2-1. Monthly Mean and Range of Selected Water Quality Parameters for the Spokane River at Post Falls, Idaho, and Riverside State Park, Washington (concentration in mg/l)

	Post Falls (River Mile 102)		Riverside State Park (River Mile 67)			
	01/75-05/79		01/74-12/77		01/78-09/79	
Parameter	Mean	Range	Mean	Range	Mean	Range
Total Phosphorus (P)	0.019	0.0 -0.090	0.113	0.020-0.949	0.035	0.010-0.088
Orthophosphorus (P)	0.010	0.0 -0.040	0.055	0.010-0.147	0.015	0.0 -0.039
Total Nitrogen (N)	0.249	0.030-2.300	0.873	0.220-2.360	0.832	0.270-1,850
Total Ammonia (N)	0.011	0.0 -0.050	0.263	0.050-0.600	0.098	0.0 -0.360
Un-ionized Ammonia (N)[1]	0.00003	0.0 -0.00026	0.00394	0.0013-0.036	0.00162	0.0 -0.01194
Nitrate and Nitrite (NO_3-N, NO_2-N)	0.026	0.0 -0.110	0.345	0.010-0.920	0.456	0.030-1.200
Cadmium (dissolved)[2]	0.009	0.0 -0.030	0.009	0.0 -0.020	0.001	0.0 -0.003
Copper (dissolved)[2]	0.039	0.0 -0.330	0.012	0.0 -0.030	0.004	0.0 -0.010
Lead (dissolved)[2]	0.082	0.004-0.250	0.100	0.006-0.200	-	-
Zinc (dissolved)[2]	0.196	0.090-0.675	0.168	0.045-0.475	0.093	0.009-0.210
Mercury (total)	0.00009	0.0 -0.4	0.00007	0.0 -0.0005	0.00013	0.0 -0.0008
Hardness (total)	-	19-31	-	22-92	59	24-170
Fecal Coliforms (#/100 ml)	8.7	0.0 -200	2,989	3-42,000	105	1-1,500
Dissolved O_2/% Saturation	11.1/104	7.7 -13.9/ 91-125	10.9/-	8.1-14.2/-	11.1/99	7.2-15.1/79-118
Biochemical Oxygen Demand$_5$[3]	1.1	0.2-1.9	2.9	0.6-8.3	-	-
Suspended Solids[4]	6.8	0.0-56	-	-	14.7	0.0-80
Dissolved Solids-180c	40	28 -54	-	-	68.7	40 -90

[1] Calculated from total ammonia concentration, pH, and temperature using conversion table in Willingham (1976).

[2] Parameter recorded as "total" for Riverside State Park (01/74-12/77).

[3] BOD at Riverside State Park for 1972-1973.

[4] Suspended Solids at Post Falls for 10/76-09/78.

SOURCE: U. S. Geological Survey 1974-1979.

Table 2-2. Washington Water Quality Standards for Class A Waters, Lake Class Waters, and EPA Water Quality Criteria

Parameter	Standard or Criterion			
	River		Lake	
	Maximum Value	24-Hour Average	Maximum Value	24-Hour Average
Un-ionized Ammonia (N)	17 μg/l[1]	NA[4]	20 μg/l	NA
Chlorine (residual)	3-5 μg/l[9]	NA	3-5 μg/l	NA
Cadmium (recoverable)	1.5 μg/l[2,8]	.012 μg/l[8]	1.5 μg/l	.012 μg/l
Copper (recoverable)	12 μg/l[2,8]	5.6 μg/l	12 μg/l	5.6 μg/l
Lead (recoverable)	74 μg/l[2,8]	.75 μg/l[8]	74 μg/l	.75 μg/l
Zinc (recoverable)	180 μg/l[2,8]	47 μg/l	180 μg/l	47 μg/l
Dissolved Oxygen	8.0 μg/l[3]	NA	no change from natural conditions	NA
Fecal Coliforms	100 mg/l[3,5]	NA	50/100 ml[6]	NA
Turbidity	5 NTU[3,7]	NA	5 NTU over background	NA
pH	6.5-8.5[3]	NA	no change from natural conditions	NA

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[1] EPA quality criteria for water (U. S. EPA 1976).

[2] Section 307(a)(i) toxic pollutant criteria (Federal Register, November 28, 1980).

[3] Washington water quality standards (Class A and Lake Class).

[4] NA = not applicable

[5] Not more than 10 percent of samples can exceed 200/100 ml.

[6] Not more than 10 percent of samples can exceed 100/100 ml.

[7] For background levels less than 50 NTU or 10 percent of background levels greater than 50 NTU.

[8] Hardness 50 mg/l $CaCO_3$.

[9] American Fisheries Society 1979.

EPA recently published criteria for the section 307(a)(i) toxic pollutants. These replace the criteria for those same pollutants found in the EPA "red book". These newer criteria designate both a maximum value which generally corresponds to an acute toxicity concentration and a 24-hour value which generally corresponds to a chronic toxicity concentration.

Specific Water Quality Parameters

Phosphorus. Extensive studies have been conducted on phosphorus levels in the Spokane River. Total phosphorus values for November 1979 to June 1980 upstream from the Spokane STP were relatively low and uniform (Table 2-3). Total and orthophosphate levels at Riverside State Park below the Spokane STP have decreased significantly since phosphorus removal began at the AWT facility in late 1977 (Table 2-1). Soltero et al. (1980) determined that effluent discharges increased orthophosphate concentrations in the river during 1979 less than 3-fold. However, prior to AWT, orthophosphate concentrations in the river usually increased 13-fold following the introduction of the sewage effluent (Soltero et al. 1980).

The major source of phosphorus in Long Lake prior to AWT in August 1978 was the Spokane STP; however, with phosphorus removal, upstream sources now contribute a higher percentage of nutrients to the lake. Phosphorus appeared to be the growth-limiting nutrient in the euphotic zone (zone of light penetration) of Long Lake in 1978, as determined by algal growth assay tests (Soltero et al. 1979). Previous studies (Soltero et al. 1976; 1978) have shown nitrogen to be the primary nutrient limiting phytoplankton growth. The transition to phosphorus as the primary growth-limiting nutrient is attributed to reductions in phosphorus loading from the Spokane STP (Soltero et al. 1979).

Yake (1979) found an inverse relationship between phosphate concentrations and flows in the lower Spokane River. Funk et al. (1973; 1975) observed two annual peaks in nutrient concentrations, one during high flow and one during low flow. High phosphate concentrations during low flows (August-October) are especially critical because they occur during the prime algal growth period.

Chlorophyll a. There has been an overall decline in chlorophyll *a* concentrations since 1978, which has been directly related to decreased phosphate loading (Soltero et al. 1979; 1980). A decreased phytoplankton biovolume was evident for most of the 1978 and 1979 growing season as a result of decreased phosphorus loading. On an annual basis, however, phytoplankton standing crop increased due to a single bloom of *Microcystis aeruginosa* in August and September (Soltero et al. 1979; 1980).

Table 2-3. Monthly Mean of Selected Water Quality Parameters for the Spokane River at Stations from the Idaho/Washington State Line, to Gonzaga University, Spokane, from 11/79 to 06/80 (concentrations in mg/l)[1]

Parameter	Spokane River Stations						
	State Line[2]	Harvard Bridge	Barker Bridge	Sullivan Bridge	Upriver	Greene Street	Gonzaga University
	(96.5 RM)[3]	(92.7 RM)	(90.4 RM)	(87.8 RM)	(80.2 RM)	(78.0 RM)	(76.0 RM)
Total phosphorus (P)	0.016	0.021	0.021	0.021	0.023	0.021	0.018
Total soluble and soluble reactive phosphorus (P)	0.014	0.012	0.010	0.011	0.012	0.010	0.010
Total nitrogen (N)[4]	0.186	0.164	0.193	0.219	0.385	0.395	0.372
Biochemical oxygen demand$_5$	1.0	1.2	0.7	1.0	1.4	1.3	1.0
Zinc (dissolved)	0.112	0.110	0.106	0.110	0.105	0.097	0.096

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[1] Funk (1980), unpublished data.
[2] Data at state line station for 11/79-03/80.
[3] Station location in river miles (RM).
[4] Data for total nitrogen for 11/79-04/80.

Since the initiation of AWT with phosphorus removal, Long Lake has conformed to predicted recoveries made by Gasperino and Soltero (1977), and Thomas and Soltero (1977). Blue-green algal blooms in Long Lake persist, but their association with eutrophic conditions is uncertain in view of the improvements in lake water quality (Soltero et al. 1979). Decreases in reservoir phosphorus and orthophosphorus concentrations, chlorophyll _a_ concentrations, and primary productivity, indicate that Long Lake is changing from a eutrophic condition to a mesotrophic condition (Soltero et al. 1979).

Nitrogen. Total nitrogen values for November 1979 to April 1980 between Post Falls and the Spokane treatment plant were generally low and gradually increased from upstream to downstream stations. Soltero et al. (1980) determined that in 1979 the Spokane treatment plant effluent produced a 160 percent increase in total inorganic nitrogen in the river. The mean daily inorganic nitrogen loads to Long Lake 1978 (June through November) were not significantly different from loads before AWT at the Spokane treatment plant (Soltero et al. 1979). However, organic nitrogen, which comprises the majority of total nitrogen loading, declined after AWT due to the activated sludge process and associated solids removal at the new plant. Although there was an increase in inorganic nitrogen load in the river due to the Spokane plant, the Spokane River upstream from Hangman Creek appears to be the major source of total nitrogen to Long Lake (Soltero et al. 1979).

Heavy Metals. The Kellogg mining district, located along the South Fork of the Coeur d'Alene River in northern Idaho, contains major mineral deposits and is the primary source of heavy metals in the Spokane River. Mining and milling activities have discharged quantities of metals, (primarily zinc, but also lead, copper, and others) to the drainage system since ore production began in 1885. In addition to metals contributed by mine drainage water and tailings leachate, metals are discharged by a large lead smelter located near Kellogg, Idaho, and an electrolyte zinc plant which reduces ore and ore concentrates to refined metals ready for market (Yake 1979).

In the early 1970s, state and federal regulatory agencies initiated programs to reduce heavy metal input to the Coeur d'Alene and Spokane River drainage basin. Nonetheless, significant quantities of heavy metals continue to leach into the Coeur d'Alene and subsequently the Spokane River. Extensive research has been conducted on the sources and effects of heavy metals in the drainage systems, and has been published in works by Ellis (1970), Mink et al. (1971), Savage and Rabe (1973), Funk et al. (1973;1975), Maxfield et al. (1974), Sheppard and Funk (1975, and Yake (1977).

The toxic effects of these elements on fish and other aquatic organisms depend on a variety of environmental factors, including dissolved oxygen concentration, pH, temperature, water hardness, and the animal species itself (U. S. EPA 1976). An increase in water temperature along with the concomitant reduction in dissolved oxygen solubility increases heavy metal toxicity, especially to the more susceptible trout and salmon species (American Fisheries Society 1979). Increased temperatures accelerate metabolic processes and the rate of gill irrigation. Consequently, fish are usually killed more rapidly at moderately elevated temperatures than at lower temperatures. Reduced dissolved oxygen concentrations require increased irrigation of respiratory surfaces. This brings to these surfaces a larger quantity of any toxin present in the water. Consequently, the summer period characterized by low flows and increased temperatures represent the time of year with the greatest potential for adverse effects on the Spokane River fishery.

Water hardness is also another factor which affects the toxicity of heavy metals on fish. Hardness is the measure of the concentration of polyvalent metallic ions dissolved in the water, principally calcium and magnesium (U. S. EPA 1976). The calcium and magnesium ions complex with the heavy metals producing a compound less toxic to fish. With some metals such as cadmium, a truly antagonistic reaction occurs in "hard" waters which inhibits uptake of metals by fish (Davies 1976). Thus, heavy metal toxicity is generally more severe in "softer" waters. Ion concentrations in the Spokane River vary from 0-50 mg/l $CaCO_3$; values in this range are indicative of "soft" waters (U. S. EPA 1976).

Zinc. Mean zinc concentrations are 0.196 mg/l at Post Falls, Idaho and 0.093 mg/l at Riverside State Park, Washington (Table 2-1). Concentrations at Post Falls exceed both the maximum and 24-hour average criteria values established by EPA whereas only the 24-hour average value is exceeded at Riverside. The 96-hour median lethal concentration (LC_{50}) for rainbow trout is reported to be 0.43 mg/l (26 m/l $CaCO_3$) (Sinley et al. 1974). Acutely toxic concentrations for the more tolerant sunfish species exceed 15.0 mg/l (Cairns et al. 1971).

Funk et al. (1975) state that zinc levels in muscle tissues of fish in the Spokane River may be 2-3 times that of the same species of fish from unpolluted streams high in the Coeur d'Alene drainage. Tissue and water quality data indicate that either resident fish have acclimated to high zinc concentrations or measurements of zinc include forms nontoxic to fish.

Cadmium. Mean concentrations at Post Falls and Riverside are <0.009 mg/l and 0.001 mg/l, respectively (Table 2-1). Recommended criteria are .000012 mg/l for the 24-hour average value and .0015 mg/l for the maximum value. Only the 24-hour average value is exceeded at Riverside whereas both values are exceeded at Post Falls. From a practical perspective, measurement of cadmium as well as other heavy metals is imprecise at such low concentrations and should be viewed only as an estimate of existing conditions when compared with EPA criteria.

Copper. Mean concentrations of copper in the Spokane River are 0.039 mg/l at Post Falls and 0.004 mg/l at Riverside (Table 2-1). Once again, heavy metal concentrations are lower at the downstream station. The EPA 24-hour average value of 0.0056 mg/l and the maximum value of .012 mg/l are only exceeded at the Post Falls sampling station. McKim and Benoit (1971) reported that the 96 LC_{50} value is 0.1 mg/l for brook trout (45 mg/l $CaCO_3$) and 0.77 mg/l for bluegill (46 mg/l $CaCO_3$). Thus, acute toxicity values even for the most sensitive salmonid species are not exceeded.

Lead. Mean lead concentrations are 0.082 mg/l at Post Falls and >0.100 mg/l at Riverside (Table 2-1). The 24-hour average concentration of .00075 mg/l and the maximum concentration of .074 mg/l are exceeded both at Post Falls and Riverside State Park.

Toxic Substances.

Chlorine (Residual). Chlorine is highly soluble and reacts readily with many inorganic substances and all plant and animal tissues. The denaturing effect of chlorine on animal and plant tissue forms the basis for its use as an effective water or wastewater disinfectant. The recommended criteria for protection of freshwater organisms are .003-.005 mg/l (U. S. EPA 1976; Thurston et al. 1979). Chlorine toxicity is most likely to occur in the zone of mixing near the outfall.

Credible data for chlorine concentrations in the Spokane River do not exist, hence comparison with safety criteria is not possible. The primary sources of chlorine in the study area are existing treatment plants at Coeur d'Alene, Idaho and Spokane, Washington. The Coeur d'Alene facility discharges approximately 9 pounds of chlorine per day which, under mean flow conditions, results in a 0.001 mg/l river concentration at the outfall site. The Spokane treatment plant discharges approximately 316 pounds per day, which under low flow summer conditions, results in 0.034 mg/l in the receiving water. Under Q_{7-10} flow conditions the resultant river concentration would be .096 mg/l. Thus, safety criteria are exceeded downstream from the Spokane plant under low flow conditions. These resultant concentrations may be conservative as they only take into account chlorine inputs from the two treatment facilities.

Un-ionized Ammonia. The un-ionized form of ammonia (NH_3) is generally recognized as the molecule toxic to fish (Willingham 1976). It exists in equilibrium with ionized ammonia (NH_4). Because of this relationship, the concentration of un-ionized ammonia is affected by pH, temperature, hardness, and the total ammonia concentration (U. S. EPA 1976). Suggested criteria are 0.017 mg/l for salmonids and 0.082 mg/l for other freshwater species (American Fisheries Society 1979). Existing Spokane River concentrations are considerably below these values at both Post Falls and Riverside State Park (Table 2-1). However, during the summer months when river temperature exceeds 15°C and pH is high, criterion violations may be occurring.

Factors Affecting Dissolved Oxygen Concentrations. Dissolved oxygen concentrations at Post Falls range from 7.7-13.9 mg/l with a mean of 11.1 mg/l and percent saturation varies from 91-125 percent with a mean value of 104 percent. Dissolved oxygen concentrations and percent saturation at Riverside range from 7.2-15.1 mg/l (mean of 11.1 mg/l) and 79-118 percent (mean of 99 percent), respectively (Table 2-1). The minimum dissolved oxygen concentration necessary to maintain productive fish populations is 5.0 mg/l (American Fisheries Society 1979). Recommended minimum criteria in the interstitial water of the gravel for salmonid spawning beds is also 5.0 mg/l (U. S. EPA 1976). Recorded concentrations in the Spokane River do not fall below this value downstream of Post Falls Dam. Washington Class A water quality standards, however, require that dissolved oxygen concentrations exceed 8.0 mg/l.

Dissolved oxygen concentrations in Long Lake, however, violate suggested EPA criteria and state standards during certain times of the year. An annual cycle of dissolved oxygen fluctuations was presented by Soltero et al. (1979). Dissolved oxygen concentrations exceeded 7.0 mg/l throughout the water column during May and June. With the development of thermal stratification in July, dissolved oxygen in the hypolimnion (the lower layer of water in a thermally stratified lake) began to decline. Hypolimnetic stagnation reached a maximum in mid-August with dissolved oxygen less than 1.0 mg/l. The greatest dissolved oxygen differential between surface and bottom waters was 11.2 mg/l in August. With the loss of thermal stratification in September, surface and bottom waters began to mix. By mid-October, dissolved oxygen concentrations again exceeded 7.0 mg/l throughout the reservoir.

Biological oxygen demand (BOD) and ammonia discharged from the treatment plant are primary factors which contribute to the deoxygenation of receiving waters. The relative effects of BOD and ammonia on the river downstream of the Spokane STP have not been measured or projected by mathematical modeling. BOD represents the measure of the quantity of dissolved oxygen necessary for the decomposition of organic matter by micro-organisms such as bacteria. In oxygenated natural water systems, ammonia is rapidly oxidized to nitrite (NO_2) and then into nitrate (NO_3). The rate at which ammonia is oxidized to nitrite and nitrate is highly dependent on environmental conditions. Unlike carbonaceous BOD, which is generally oxidized by a spectrum of heterotrophic (nonself-nourishing) bacteria in the water column, ammonia is oxidized by a few specialized genera of bacteria. These nitrifiers are typically found attached to substrate. Therefore, the nitrification rate is a function of river bottom area, water volume ratios, as well as substrate types (Yake 1976).

Impacts of the Proposed Alternatives on Existing Surface Water Quality

The following water quality impacts for those project alternatives still being considered (no-action, A, A-1, A-2 and A-3) are based on projected effluent concentrations, effluent volumes, and river dilution at the proposed outfall site (Table 2-4). River discharge data at Post Falls and Riverside State Park were obtained from USGS records. River loading and concentration increases were calculated for three different flow regimes: 1) median flow of the critical month, 2) Q_{7-10} flow lowest 7-day average flow recorded over a 10-year period, and 3) 15 percent of the Q_{7-10} flow which is used to represent the initial dilution zone of the Spokane STP. The dilution zone value may be more indicative of the most severe possible river conditions as it does not assume complete mixing of wastewater in the river at the point of effluent discharge.

Resultant river concentrations due to each alternative were calculated by considering the effects of the increase in effluent load over the present load rather than the effects of the entire proposed load. For example, under the no-action alternative the proposed effluent volume by 1992 would be 34 MGD. Rather than considering the effect of the entire 34 MGD, only the difference between proposed and existing (34-31.5 = 2.5 MGD) effluent volumes was considered. The increase in river concentration due to the additional effluent volume (2.5 MGD) was then added to existing river concentrations (Table 2-2). This method was chosen as existing river concentrations monitored at Riverside State Park already take into account the result of the current effluent load being discharged by the Spokane treatment facility.

Table 2-4. Projected Effluent Volumes and Effluent Pollutant Concentrations for Each Alternative

Parameter (mg/l)	1992 NA	1992 A	1992 Alternative A-1	1992 A-2	1992 A-3	2002 NA	2002 A	2002 Alternative A-1	2002 A-2	2002 A-3
Effluent Volume (April-October) (MGD)	34	44	44	44	44	36	62	62	44	62
Effluent Volume (November-March) (MGD)	34	44	44	44	44	36	62	62	66[8]	62
Total Phosphorus (April-October) (mg/l)	.94[3]	.94	.94	.94	.51	.94	.94	.94	.94	.36
Total Phosphorus (November-March) (mg/l)	.94[3]	.94	5.0	5.0	5.0	.94	.94	5.0	5.0	5.0
Total Nitrogen (mg/l)	19.2[3]	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
Total Ammonia (mg/l)	.1-5.5[6]	14[5]	14	14	14[7]	.1-5.5	14	14	14	14[7]
Un-ionized Ammonia (mg/l)	.21[4]	.54	.54	.54	.54	21	.54	.54	.54	.54
Chlorine (mg/l)	.8-1.2[3]	.8-1.2	.8-1.2	.8-1.2	.8-1.2[7]	.8-1.2	.8-1.2	.8-1.2	.8-1.2	.8-1.2[7]
Fecal Coliforms	50-200/ 100 ml[3]	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml	50-200/ 100 ml
BOD (mg/l)	21[3]	21	21	21	21	21	21	21	21	21
Cadmium (mg/l)	<.01[1],[2]	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Copper (mg/l)	.03[1]	.03	.03	.03	.03	.03	.03	.03	.03	.03
Lead (mg/l)	<.05[1]	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
Zinc (mg/l)	.11[1]	.11	.11	.11	.11	.11	.11	.11	.11	.11

[1] Bernhardt pers. comm. DOE/EPA intensive monitoring program, March 31, June 10, 11, 1980; and February 11, 1981.
[2] One sample only.
[3] Based on effluent data from Washington DOE.
[4] Un-ionized ammonia (N) calculated from pH, temperature and total ammonia (worst case basis = median August values; pH = 8.1, temperature = 17.2°C.)
[5] Value represents upper limit of predicted concentrations.
[6] Spokane treatment plant monitoring data (summer months) (Wash, DOE pers. comm.).
[7] Effluent concentrations of chlorine and un-ionized ammonia will be reduced if river concentrations exceed critical values.
[8] Kermeyer pers. comm.

A different procedure was followed for calculating un-ionized ammonia and chlorine river concentration increases. Since background data for chlorine concentrations do not exist, resultant concentrations were calculated by considering the total effluent volume rather than just the increase over present volume. The effects of un-ionized ammonia were assessed using two methods. Resultant river concentrations were calculated by: 1) considering only the effects of the increase in effluent load over present loads, and 2) by considering the effects of the total effluent load. This was necessary as the value used for the projected effluent concentration of un-ionized ammonia is significantly different than the value used for the current effluent concentration (Table 2-4).

No-Action Alternative. This alternative would allow the existing Spokane treatment plant effluent discharge to increase from 31.5 MGD to 34 MGD in 1992 and to 36 MGD in 2002.

Phosphorus Increases. Phosphorus concentrations high enough to produce algae of nuisance abundances are difficult to determine and vary from one geographical area to another. A given phosphorus level may produce noxious plant growth in a lake, whereas that same level may produce no visible effects in the river which flows into that lake (U. S. EPA 1976). Total nutrient loading to a water body is more indicative of potential long-term effects than concentration increases (Vollenweider 1968). Hence, any attempt to establish single-value critical concentrations in the water for phosphorus is inadequate (Thurston et al. 1979).

Based on the formula of Vollenweider (1968) and modified by Dillon (1975) and Soltero, Washington DOE (1981) calculated the phosphorus loading to Long Lake required to produce a designated concentration of chlorophyll a during the algal growing season (Table 2-5).

The Washington DOE report further states that a chlorophyll a value greater than 10 μg/l is indicative of eutrophic waters. Using this criterion, the no-action alternative exceeds permissible loading to Long Lake by 11 pounds per day by 1992 (Table 2-5). Based on recently revised data, DOE is considering a maximum permissible load to Long Lake of 507 pounds per day (Washington DOE 1981a). If a phosphorus allocation scheme is implemented which only requires waste treatment facilities to reduce loading, the Spokane STP could only discharge 259 pounds per day, 8 pounds per day less than projected under this alternative (Table 2-5).

Table 2-5. Projected and Permissible Total Phosphorus Loadings (lbs/day) to the Spokane River[4,5]

Alternative	Projected Load Spokane STP[1,2]	Projected Load Liberty Lake STP[1,2]	Projected Load Idaho STP[1,2]	Projected Load All Other[1,2]	Total Load to Long Lake	Total Permissible Load to Long Lake[2]	Percent Reduction Required[3]	Total Permissible Load at Spokane WWTP[3]
1992								
A	346	30	53	168	597	507	21%	273
A-1	346	30	53	168	597	507	21%	273
A-2	346	30	53	168	597	507	21%	273
A-3	187	30	53	168	438	507	0%	NA[6]
NA	267	30	53	168	518	507	3%	259
2002								
A	487	0	70	168	725	507	39%	297
A-1	487	0	70	168	725	507	39%	297
A-2	346	0	70	168	584	507	19%	280
A-3	186	0	70	168	424	507	0%	NA
NA	283	0	70	168	521	507	4%	272

FOOTNOTES:

[1] Washington DOE waste load allocation study.
[2] Washington DOE pers. comm.
[3] If only STP's are required to reduce phosphorus loading.
[4] Retention coefficient of phosphorus in Long Lake = .25, chlorophyll a concentration of 10 μg/l.
[5] Spokane, Liberty Lake and Idaho STP's at 85 percent removal.
[6] NA = not applicable.

Total Nitrogen. Nitrogen loading would increase from approximately 5,052 pounds per day to 5,454 pounds per day (8 percent) by 1992 and to 5,775 pounds per day (14 percent) by 2002 (Table 2-6). Nitrogen increases are unlikely to produce any significant effects on Long Lake water quality as long as phosphorus remains the primary limiting nutrient. The only potential adverse effects would be increased algal growth immediately downstream from the outfall site.

Zinc. Under low summer flow conditions zinc concentrations in the river would increase from .0930 mg/l to .0932 mg/l by 1992 and to .0934 mg/l by 2002 (Tables 2-7 and 2-8). Although these increases would be relatively small (< 1 percent), river concentrations already exceed EPA 24-hour average criteria, which generally represent chronic toxicity to fish. At 30-day 1-in-10 year low flows the 24-hour average criterion would be exceeded during every month of the year (Table 2-9). The maximum EPA criteria of .18 mg/l would not be exceeded under Q_{7-10} flow conditions or in the dilution zone (Tables 2-10 through 2-13). Any additional zinc input, however, regardless of how small, would exceed chronic toxicity conditions and have an adverse impact on fish productivity.

Copper. Copper concentrations in the river would increase from .0040 mg/l to .0041 mg/l by 2002 under low summer flow conditions (Table 2-8). This resultant concentration would not exceed the 24-hour EPA average criteria of .0056 mg/l. At 30-day 1-in-10 year low flows the 24-hour average criterion would not be exceeded during any month of the year (Table 2-14). In the dilution zone this value would be exceeded by 1992 (.0115 mg/l); however, the maximum EPA criteria of .0012 mg/l would not be reached. Consequently, fish productivity should not be significantly impaired by increased copper inputs; however, the possibility of increased fry and egg mortality, in the initial dilution zone, immediately downstream from the outfall site is conceivable.

Cadmium. Under low summer flow conditions cadmium concentrations would reach .001 mg/l by 2002 (Table 2-8). The 24-hour EPA criteria of .000012 mg/l would be exceeded, whereas the .0015 mg/l maximum value would only be exceeded in the dilution zone (Table 2-13). Fish productivity would only be significantly reduced in the area immediately downstream from the outfall site. The size of the area affected would of course depend on a variety of physical river parameters below the point of effluent discharge.

Table 2-6. Projected Loading (lbs/day) of Selected Water Quality Parameters Due to Each Alternative[1]

	1992					2002				
	Alternative					Alternative				
Parameter	A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
Total Nitrogen (N)	7,058	7,058	7,058	7,058	5,454	9,945	9,945	7,058	9,945	5,775
Total Ammonia (N)	2,022	2,022	2,022	2,022	1,562	2,849	2,849	2,022	2,849	1,654
BOD_5	7,720	7,720	7,720	7,720	5,965	10,878	10,878	7,720	10,878	6,316

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[1] Projected summer effluent concentration and volume (April-October).

Table 2-7. Calculated Increases[4] and Resultant Spokane River Concentrations[1] of Selected Water Quality Parameters at the Point of Effluent Discharge Due to Each Proposed Alternative at Low Summer Flow[2] - 1992[3] (mg/l)

Parameter	Alternatives									
	A		A-1		A-2		A-3		NA	
	Increase	Resultant[3]	Increase	Resultant	Increase	Resultant	Increase	Resultant	Increase	Resultant
Dilution ratio	1/92		1/92		1/92		1/92		1/549	
Total phosphorus (P)	0.010	0.045	0.010	0.045	0.010	0.045	0.010	0.045	0.002	0.037
Total nitrogen (N)	0.209	1.041	0.209	1.041	0.209	1.041	0.209	1.041	0.035	0.867
Total ammonia (N)	0.152	0.250	0.152	0.250	0.152	0.250	0.152	0.250	0.010	0.108
Un-ionized ammonia (N)	0.006	0.008	0.006	0.008	0.006	0.008	0.006	0.008	0.0004	0.002
Chlorine[5] (CL)	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.036	0.036
Cadmium	<0.0001	0.0011	<0.0001	0.0011	<0.0001	0.0011	<0.0001	0.0011	0.0000^{0}	0.0010
Copper	0.0003	0.0043	0.0003	0.0043	0.0003	0.0043	0.0003	0.0043	<0.0001	0.0041
Lead[6]	<0.0005	0.1005	<0.0005	0.1005	<0.0005	0.1005	<0.0005	0.1005	<0.0001	0.1001
Zinc	0.0012	0.0942	0.0012	0.0942	0.0012	0.0942	0.0012	0.0942	0.0002	0.0932
BOD_5[7]	0.228	3.128	0.228	3.128	0.228	3.128	0.228	3.128	0.038	2.938

[1] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[2] Mean of the most critical summer month (August) 1,700 cfs.

[3] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

[4] Using the summer effluent discharge.

[5] Calculated increase due to total effluent discharge (using 1.2 mg/l).

[6] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).

[7] Using data at Riverside State Park averaged over 1972 to 1973 (USGS).

Table 2-8. Calculated Increases[4] and Resultant Spokane River Concentrations[1] of Selected Water Quality Parameters at the Point of Effluent Discharge Due to Each Proposed Alternative at Low Summer Flow[2] - 2002[3] (mg/l)

	Alternatives									
	A		A-1		A-2		A-3		NA	
Parameter	Increase	Resultant[3]	Increase	Resultant	Increase	Resultant	Increase	Resultant	Increase	Resultant
Dilution ratio	1/38		1/38		1/92		1/38		1/275	
Total phosphorus (P)	0.025	0.060	0.025	0.060	0.010	0.045	0.025	0.060	0.003	0.038
Total nitrogen (N)	0.505	1.337	0.505	1.337	0.208	1.040	0.505	1.337	0.070	0.902
Total ammonia (N)	0.368	0.466	0.368	0.466	0.152	0.250	0.368	0.466	0.020	0.118
Un-ionized ammonia (N)	0.014	0.016	0.014	0.016	0.006	0.008	0.014	0.016	0.0004	0.002
Chlorine[5] (CL)	0.064	0.064	0.064	0.064	0.046	0.046	0.064	0.064	0.038	0.038
Cadmium	<.0003	0.0013	<.0003	.0013	<0.0001	.0011	<.0003	0.0013	0.0000	0.0010
Copper	0.0008	0.0048	0.0008	.0048	0.0003	.0043	0.0008	0.0048	0.0001	0.0041
Lead[6]	<0.0013	0.1013	0.0013	0.1013	<0.0005	.1005	0.0013	0.1013	<0.0002	0.1002
Zinc	0.0029	.0959	0.0029	0.0959	0.0012	.0942	0.0029	0.0959	0.0004	0.0934
BOD_5[7]	0.553	3.453	0.553	3.453	0.2284	3.128	0.553	3.453	0.076	2.976

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[1] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[2] Mean of the most critical summer month (August) 1,700 cfs.

[3] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

[4] Using the summer effluent discharge.

[5] Calculated increase due to total effluent discharge (using 1.2 mg/l).

[6] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).

[7] Using data at Riverside State Park averaged over 1972 to 1973 (USGS).

Table 2-9. Resultant Zinc Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3,4]

Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2] 24-Hour Average	Criterion Maximum	Zinc Resultant Concentration (mg/l) Alternative									
				1992					2002				
				A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
January	2,820	.047	.180	.0937	.0937	.0937	.0937	.0931	.0939	.0939	.0950	.0939	.0932
February	3,971	.047	.180	.0935	.0935	.0935	.0935	.0931	.0938	.0938	.0945	.0938	.0931
March	4,571	.047	.180	.0935	.0935	.0935	.0935	.0931	.0937	.0937	.0943	.0937	.0931
April	5,661	.047	.180	.0934	.0934	.0934	.0934	.0931	.0935	.0935	.0934	.0935	.0931
May	6,870	.047	.180	.0933	.0933	.0933	.0933	.0931	.0934	.0934	.0933	.0934	.0931
June	3,360	.047	.180	.0936	.0936	.0936	.0936	.0931	.0939	.0939	.0936	.0939	.0932
July	1,308	.047	.180	.0946	.0946	.0946	.0946	.0933	.0953	.0953	.0946	.0953	.0935
August	742	.047	.180	.0957	.0957	.0957	.0957	.0935	.0969	.0969	.0957	.0969	.0939
September	716	.047	.180	.0958	.0958	.0958	.0958	.0935	.0971	.0971	.0958	.0971	.0939
October	1,266	.047	.180	.0946	.0946	.0946	.0946	.0933	.0954	.0954	.0946	.0954	.0935
November	2,058	.047	.180	.0940	.0940	.0940	.0940	.0932	.0945	.0945	.0958	.0945	.0933
December	2,360	.047	.180	.0939	.0939	.0939	.0939	.0931	.0943	.0943	.0954	.0943	.0933

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[1] USGS data at Riverside State Park (cfs).

[2] *Federal Register*, November 28, 1980.

[3] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[4] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

Table 2-10. Calculated Increases[4] and Resultant Spokane River Concentrations[1] of Selected Water Quality Parameters at the Point of Effluent Discharge Due to Each Proposed Alternative at Q_{7-10} Flow[2] - 1992[3] (mg/l)

	Alternatives									
	A		A-1		A-2		A-3		NA	
Parameter	Increase	Resultant[3]	Increase	Resultant	Increase	Resultant	Increase	Resultant	Increase	Resultant
Dilution ratio	1/31		1/31		1/31		1/31		1/182	
Total phosphorus (P)	0.030	0.065	0.030	0.065	0.030	0.065	0.030	0.065	0.005	0.040
Total nitrogen (N)	0.619	1.451	0.619	1.451	0.619	1.451	0.619	1.451	0.106	0.938
Total ammonia (N)	0.452	0.550	0.452	0.550	0.452	0.550	0.452	0.550	0.030	0.128
Un-ionized ammonia (N)	0.0174	0.019	0.0174	0.019	0.0174	0.019	0.0174	0.019	0.001	0.003
Chlorine[5] (CL)	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.103	0.103
Cadmium	<0.0003	0.0013	<0.0003	0.0013	<0.0003	0.0013	<0.0003	0.0013	<0.0001	0.0011
Copper	0.0009	0.0049	0.0009	0.0049	0.0009	0.0049	0.0009	0.0049	0.0002	0.0042
Lead[6]	<0.0016	0.1016	<0.0016	0.1016	<0.0016	0.1016	<0.0016	0.1016	<0.0003	0.1003
Zinc	0.0035	0.0965	0.0035	0.0965	0.0035	0.0965	0.0035	0.0965	0.0003	.0933
BOD_5[7]	0.6774	3.577	0.6774	3.577	0.6774	3.577	0.6774	0.6774	0.1154	3.0154

[1] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).
[2] 7-day, 10-year low flow - 560 cfs.
[3] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.
[4] Using the summer effluent discharge.
[5] Calculated increase due to total effluent discharge (using 1.2 mg/l).
[6] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).
[7] Using data at Riverside State Park averaged over 1972 to 1973 (USGS).

Table 2-11. Calculated Increases[4] and Resultant Spokane River Concentrations[1] of Selected Water Quality Parameters at the Point of Effluent Discharge Due to Each Proposed Alternative at Q_{7-10} Flow[2] - 2002[3] (mg/1)

	Alternatives									
	A		A-1		A-2		A-3		NA	
Parameter	Increase	Resultant[3]	Increase	Resultant	Increase	Resultant	Increase	Resultant	Increase	Resultant
Dilution ratio	1/13		1/13		1/13		1/13		1/91	
Total phosphorus (P)	0.072	0.107	0.072	0.107	0.030	0.065	0.072	0.107	0.010	0.045
Total nitrogen (N)	1.477	2.309	1.477	2.309	0.619	1.451	1.477	2.309	0.211	3.943
Total ammonia (N)	1.077	1.175	1.077	1.175	0.452	0.550	1.077	1.175	0.060	0.158
Un-ionized ammonia (N)	0.041	0.043	0.041	0.043	0.0174	0.019	0.041	0.043	0.001	0.003
Chlorine[5] (CL)	0.176	0.176	0.176	0.176	0.130	0.130	0.176	0.176	0.109	0.109
Cadmium	<0.0008	0.0018	<0.0008	0.0018	<0.0003	0.0013	<0.0008	0.0018	<0.0001	0.0011
Copper	0.0023	0.0063	0.0023	0.0063	0.0009	0.0049	0.0023	0.0063	0.0003	0.0043
Lead[6]	<0.0039	0.1039	<0.0039	0.1039	<0.0016	0.1016	0.0039	0.1039	<0.0005	0.1005
Zinc	0.0088	0.1018	0.0088	0.1018	0.0035	0.0965	0.0088	0.1018	0.0121	0.1051
BOD_5[7]	1.615	4.515	1.615	4.515	0.6774	3.577	1.615	4.515	0.231	3.131

[1] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[2] 7-day, 10-year low flow.

[3] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

[4] Using the summer effluent discharge.

[5] Calculated increase due to total effluent discharge (using 1.2 mg/l).

[6] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).

[7] Using data at Riverside State Park averaged over 1972 to 1973 (USGS).

Table 2-12. Calculated Increases[4] and Resultant Spokane River Concentrations[1] of Selected Water Quality Parameters at the Point of Effluent Discharge Due to Each Proposed Alternative at Dilution Zone[2] - 1992[3] (mg/l)

Parameters	Alternatives				
	A	A-1	A-2	A-3	NA
	Resultant	Resultant	Resultant	Resultant	Resultant
Dilution ratio	1/2.2	1/2.2	1/2.2	1/2.2	1/2.6
Total phosphorus (P)	0.427	0.427	0.427	0.427	0.362
Total nitrogen (N)	8.727	8.727	8.727	8.727	7.385
Total ammonia (N)	6.364	6.364	6.364	6.364	2.115
Un-ionized ammonia (N)	0.245	0.245	0.245	0.245	0.081
Chlorine[5] (CL)	0.545	0.545	0.545	0.545	0.461
Cadmium	<0.0045	<0.0045	<0.0045	<0.0045	<0.0039
Copper	0.0136	0.0136	0.0136	0.0136	0.0115
Lead[6]	<0.0227	<0.0027	<0.0027	<0.0027	<0.0192
Zinc	0.0500	0.0500	0.0500	0.0500	0.0192
BOD_5[7]	9.545	9.545	9.545	9.545	8.077

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[1] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS.

[2] Calculated using 15 percent of Q_{7-10} flow - 84 cfs.

[3] Resultant concentrations were calculated by taking into account the effect of the entire effluent volume, disregarding existing river concentrations.

[4] Using the summer effluent discharge.

[5] Calculated increase due to total effluent discharge (using 1.2 mg/l).

[6] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).

[7] Using data at Riverside State Park averaged over 1972 to 1973 (USGS).

Table 2-13. Calculated Increases[4] and Resultant Spokane River Concentrations[1] of Selected Water Quality Parameters at the Point of Effluent Discharge Due to Each Proposed Alternative at Dilution Zone[2] - 2002[3] (mg/l)

	Alternatives				
	A	A-1	A-2	A-3	NA
Parameter	Resultant	Resultant	Resultant	Resultant	Resultant
Dilution ratio	1/1.9	1/1.9	1/2.2	1/1.9	1/2.5
Total phosphorus (P)	0.495	0.495	0.427	0.495	0.376
Total nitrogen (N)	10.105	10.105	8.727	10.105	7.680
Total ammonia (N)	7.368	7.368	6.364	7.368	2.200
Un-ionized ammonia (N)	0.284	0.284	0.245	0.284	0.084
Chlorine[5] (CL)	0.631	0.631	.545	0.631	0.480
Cadmium	<0.0053	<0.0053	<0.0045	<0.0053	<0.0040
Copper	0.0158	0.0158	0.0136	0.0158	0.0120
Lead[6]	<0.0263	<0.0263	<0.0227	<0.0263	<0.0200
Zinc	0.0579	0.0579	0.0227	0.0579	.0200
BOD_5[7]	11.052	11.052	9.545	11.052	8.400

[1] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[2] Calculated using 15 percent of Q_{7-10} flow - 84 cfs.

[3] Resultant concentrations were calculated by taking into account the effect of the entire effluent volume, disregarding existing river concentrations.

[4] Using the summer effluent discharge.

[5] Calculated increase due to total effluent discharge (using 1.2 mg/l).

[6] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).

[7] Using data at Riverside State Park averaged over 1972 to 1973 (USGS).

Table 2-14. Resultant Copper Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3,4]

Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2] 24-Hour Average	Criterion Maximum	Copper Resultant Concentration (mg/l) Alternative									
				1992					2002				
				A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
January	2,820	.0056	.012	.0042	.0042	.0042	.0042	.0040	.0045	.0045	.0046	.0045	.0041
February	3,971	.0056	.012	.0041	.0041	.0041	.0041	.0040	.0043	.0043	.0044	.0043	.0041
March	4,571	.0056	.012	.0041	.0041	.0041	.0041	.0040	.0043	.0043	.0044	.0043	.0040
April	5,661	.0056	.012	.0041	.0041	.0041	.0041	.0040	.0042	.0042	.0041	.0042	.0040
May	6,870	.0056	.012	.0041	.0041	.0041	.0041	.0040	.0042	.0042	.0041	.0042	.0040
June	3,360	.0056	.012	.0042	.0042	.0042	.0042	.0040	.0044	.0044	.0042	.0044	.0041
July	1,308	.0056	.012	.0044	.0044	.0044	.0044	.0041	.0050	.0050	.0044	.0050	.0041
August	742	.0056	.012	.0047	.0047	.0047	.0047	.0041	.0058	.0058	.0047	.0058	.0043
September	716	.0056	.012	.0048	.0048	.0048	.0048	.0041	.0059	.0059	.0048	.0059	.0043
October	1,266	.0056	.012	.0044	.0044	.0044	.0044	.0041	.0050	.0050	.0044	.0050	.0041
November	2,058	.0056	.012	.0043	.0043	.0043	.0043	.0041	.0047	.0047	.0048	.0047	.0041
December	2,360	.0056	.012	.0042	.0042	.0042	.0043	.0040	.0046	.0046	.0047	.0046	.0041

[1] USGS data at Riverside State Park (cfs).

[2] Federal Register, November 28, 1980

[3] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[4] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

Lead. Both the 24-hour (.00075 mg/l) and maximum EPA criteria (.074 mg/l) are currently being exceeded at Riverside State Park. Consequently, any additional lead input would adversely affect existing fish populations. Under low flow summer conditions, concentrations would exceed .1000 mg/l by 2002 (Table 2-8) and under Q_{7-10} flow conditions exceed .1005 mg/l (Table 2-11). At 30-day 1-in-10 year low flows the 24-hour average and maximum criteria would be exceeded during every month of the year (Table 2-15).

Chlorine (Residual). Under low summer flow conditions chlorine concentrations would be .036 mg/l by 1992 and .038 mg/l by 2002 (Tables 2-7 and 2-8). The EPA criteria of .003-.005 mg/l would be exceeded by a significant amount. Concentrations would be .103 mg/l by 2002 at Q_{7-10} flows (Table 2-11) and .480 mg/l in the dilution zone (Table 2-13). The EPA criterion would be violated during each month of the year at 30-day 1-in-10 year low flows (Table 2-16).

Un-ionized Ammonia. Un-ionized ammonia concentrations would not exceed the .017 mg/l criteria under low summer flow or Q_{7-10} flow conditions (Tables 2-8 and 2-11). Only in the dilution zone where concentrations could exceed .084 mg/l does the potential for significant impairment of fish productivity exist (Table 2-13).

If background un-ionized ammonia concentrations are assumed to be 0.0 mg/l, the 34 MGD 1992 and 36 MGD 2002 effluent discharges would not produce river concentrations that exceed EPA criteria during any month of the year. Only during August and September would concentrations approach the 0.02 mg/l criterion (Table 2-17).

If only the increase in effluent volume over present conditions is assessed, resultant concentrations at the point of effluent discharge would be well below the safety criterion (Table 2-18).

Dissolved Oxygen Decreases. BOD loading would increase from the current level of approximately 5,526 pounds per day to 5,965 pounds per day by 1992 and 6,316 pounds per day by 2002 (Table 2-6). Concentrations would increase from 2.900 mg/l to 2.938 mg/l by 1992 and 2.976 by 2002 under low flow summer conditions (Tables 2-7 and 2-8).

Total ammonia loading from the Spokane plant would be 1,562 pounds per day by 1992 and 1,654 pounds per day by 2002. The resultant river concentration increases would be .108 mg/l and .118 mg/l, respectively.

Table 2-15. Resultant Lead Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3,4]

Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2] 24-Hour Average	Criterion Maximum	Lead Resultant Concentration (mg/l) Alternative									
				1992					2002				
				A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
January	2,820	.00075	.074	.1003	.1003	.1003	.1003	.1001	1.004	.1004	.1009	.1004	.1001
February	3,971	.00075	.074	.1002	.1002	.1002	.1002	.1000	.1003	.1003	.1007	.1003	.1001
March	4,571	.00075	.074	.1002	.1002	.1002	.1002	.1000	.1003	.1003	.1006	.1003	.1001
April	5,661	.00075	.074	.1002	.1002	.1002	.1002	.1000	.1003	.1003	.1002	.1003	.1001
May	6,870	.00075	.074	.1001	.1001	.1001	.1001	.1000	.1003	.1003	.1001	.1003	.1001
June	3,360	.00075	.074	.1003	.1003	.1003	.1003	.1001	.1004	.1004	.1003	.1004	.1004
July	1,308	.00075	.074	.1007	.1007	.1007	.1007	.1001	.1010	.1010	.1007	.1010	.1002
August	742	.00075	.074	.1012	.1012	.1012	.1012	.1002	.1018	.1018	.1012	.1018	.1004
September	716	.00075	.074	.1013	.1013	.1013	.1013	.1002	.1019	.1019	.1013	.1019	.1004
October	1,266	.00075	.074	.1007	.1007	.1007	.1007	.1001	.1011	.1011	.1007	.1011	.1002
November	2,058	.00075	.074	.1005	.1005	.1005	.1005	.1001	.1007	.1007	.1013	.1007	.1001
December	2,360	.00075	.074	.1004	.1004	.1004	.1004	.1001	.1006	.1006	.1011	.1006	.1001

[1] USGS data at Riverside State Park (cfs).

[2] *Federal Register*, November 28, 1980.

[3] Using data at Riverside State Park averaged over January 1974 to December 1977 (USGS).

[4] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

Table 2-16. Resultant Chlorine Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3]

Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2]	Chlorine Resultant Concentration (mg/l) Alternative 1992 A	A-1	A-2	A-3	NA	2002 A	A-1	A-2	A-3	NA
January	2,820	.003-.005	.0283	.0283	.0283	.0283	.0220	.0395	.0395	.0420	.0395	.0233
February	3,971	.003-.005	.0203	.0203	.0203	.0203	.0157	.0284	.0284	.0301	.0284	.0166
March	4,571	.003-.005	.0176	.0176	.0176	.0176	.0137	.0247	.0247	.0262	.0247	.0145
April	5,661	.003-.005	.0143	.0143	.0143	.0143	.0111	.0200	.0200	.0143	.0200	.0117
May	6,870	.003-.005	.0118	.0118	.0118	.0118	.0091	.0166	.0166	.0118	.0166	.0097
June	3,360	.003-.005	.0239	.0239	.0239	.0239	.0185	.0337	.0337	.0239	.0337	.0196
July	1,308	.003-.005	.0595	.0595	.0595	.0595	.0465	.0821	.0821	.0595	.0821	.0491
August	742	.003-.005	.1010	.1010	.1010	.1010	.0796	.1376	.1376	.1010	.1376	.0839
September	716	.003-.005	.1044	.1044	.1044	.1044	.0823	.1420	.1420	.1044	.1420	.0868
October	1,266	.003-.005	.0613	.0613	.0613	.0613	.04800	.0847	.0847	.0613	.0847	.0507
November	2,058	.003-.005	.0385	.0385	.0385	.0385	.0300	.0535	.0535	.0568	.0535	.0317
December	2,360	.003-.005	.0337	.0337	.0337	.0337	.0262	.0470	.0470	.0499	.0470	.0277

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[1] USGS Data at Riverside State Park (cfs).

[2] Quality criteria for water (EPA 1976).

[3] Resultant concentrations were calculated by taking into account the effect of the entire effluent volume, as no credible data exist on river concentrations.

Table 2-17. Resultant Un-ionized Ammonia Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3]

			Un-ionized Ammonia Resultant Concentration (mg/l) Alternative									
			1992					2002				
Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2]	A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
January	2,820	.017	.0127	.0127	.0127	.0127	.0039	.0178	.0178	.0189	.0178	.0041
February	3,971	.017	.0091	.0091	.0091	.0091	.0027	.0128	.0128	.0135	.0128	.0029
March	4,571	.017	.0079	.0079	.0079	.0079	.0024	.0111	.0111	.0118	.0111	.0025
April	5,661	.017	.0064	.0064	.0064	.0064	.0019	.0090	.0090	.0064	.0090	.0020
May	6,870	.017	.0053	.0053	.0053	.0053	.0016	.0075	.0075	.0053	.0075	.0017
June	3,360	.017	.0176	.0176	.0176	.0176	.0032	.0152	.0152	.0176	.0152	.0034
July	1,308	.017	.0268	.0268	.0268	.0268	.0081	.0369	.0369	.0268	.0369	.0086
August	742	.017	.0455	.0455	.0455	.0455	.0139	.0619	.0619	.0455	.0619	.0147
September	716	.017	.0470	.0470	.0470	.0470	.0144	.0639	.0639	.0470	.0639	.0152
October	1,266	.017	.0276	.0276	.0276	.0276	.0084	.0381	.0381	.0276	.0381	.0089
November	2,058	.017	.0173	.0173	.0173	.0173	.0053	.0241	.0241	.0256	.0241	.0055
December	2,360	.017	.0152	.0152	.0152	.0152	.0046	.0212	.0212	.0225	.0212	.0048

[1] USGS data at Riverside State Park (cfs).

[2] *Federal Register*, November 28, 1980.

[3] Resultant concentrations were calculated by taking into account the effect of the entire effluent volume, disregarding existing river concentrations.

Table 2-18. Resultant Un-Ionized Ammonia Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3]

Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2]	Un-ionized Ammonia Resultant Concentration (mg/l) Alternative									
			1992					2002				
			A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
January	2,820	.017	.0053	.0053	.0053	.0053	.0019	.0105	.0105	.0116	.0105	.0021
February	3,971	.017	.0042	.0042	.0042	.0042	.0018	.0080	.0080	.0088	.0080	.0020
March	4,571	.017	.0039	.0039	.0039	.0039	.0018	.0071	.0071	.0078	.0071	.0019
April	5,661	.017	.0034	.0034	.0034	.0034	.0017	.0061	.0061	.0034	.0061	.0019
May	6,870	.017	.0031	.0031	.0031	.0031	.0017	.0053	.0053	.0031	.0053	.0018
June	3,360	.017	.0047	.0047	.0047	.0047	.0018	.0091	.0091	.0047	.0091	.0020
July	1,308	.017	.0095	.0095	.0095	.0095	.0022	.0204	.0204	.0095	.0204	.0027
August	742	.017	.0154	.0154	.0154	.0154	.0027	.0339	.0339	.0154	.0339	.0036
September	716	.017	.0158	.0158	.0158	.0158	.0027	.0350	.0350	.0158	.0350	.0036
October	1,266	.017	.0098	.0098	.0098	.0098	.0022	.0210	.0210	.0098	.0210	.0028
November	2,058	.017	.0066	.0066	.0066	.0066	.0020	.0137	.0137	.0152	.0137	.0023
December	2,360	.017	.0060	.0060	.0060	.0060	.0019	.0122	.0122	.0136	.0122	.0022

[1] USGS data at Riverside State Park (cfs).
[2] Quality criteria for water (EPA 1976).
[3] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

Fish embryonic and larval stages are especially vulnerable to decreased DO concentrations because their ability to extract oxygen from the water is not fully developed, and they cannot move away from adverse conditions (U. S. EPA 1976). This is especially true of the salmonids which bury their fertilized eggs in gravel. The flow through gravel is often slow, especially if siltation has occurred. If it is slow enough, the developing fish and other benthic organisms can easily deplete the oxygen supply enough to cause damage, especially if the concentration in the water is relatively low before it enters the gravel (Cooper 1965).

Embryonic and larval forms restricted to the flowing portions of the river should not be subjected to significantly decreased DO concentrations. However, DO concentrations in slow-flowing or impounded areas, such as upstream from Nine Mile Dam, may be reduced below existing levels due to increased BOD_5 and ammonia loads. Adult fish, repelled by low oxygen concentrations, particularly at high temperatures, can simply avoid these areas (Jones 1952). Embryonic and larval stages, in contrast, cannot usually move away.

The magnitude of the DO decreases is difficult to assess as sufficient data on physical river parameters are lacking. A modeled stream segment can only be indicative of actual conditions if sufficient data exist on re-aeration rates, temperature, BOD, nitrogenous and benthic oxygen demand, de-oxygenation rates, and algal respiration and photosynthesis to calibrate the model. DOE proposed the use of two different models to predict the effects of additional waste loads to the Spokane River and Long Lake (Washington DOE 1981). A preliminary run with the simpler of the two models was conducted to assess the effects of future BOD loading. The results show little marked difference in resulting DO concentrations from a previous run used to determine existing conditions without additional BOD loading. The report indicates, however, that new synoptic surveys are necessary to provide a technically valid basis for waste load allocation as data are insufficient to accurately establish de-oxygenation coefficients necessary to calibrate the models (Washington DOE 1981).

The effects of upstream increases in BOD_5 and total ammonia on Long Lake is another area of extreme uncertainty. Cunningham and Pine (1969) and Soltero (pers. comm.) suggest that the BOD carried by the river is essentially exerted before entering Long Lake. The anaerobic condition of the lake is the result primarily of plankton decomposition within the lake itself. Cunningham and Pine (1969) found a high positive correlation between the quantity of volatile sediments and the DO concentrations in the overlying water.

The warmwater fish species (bluegill, sunfish, crappie, bass and perch) inhabiting the lake are capable of surviving in waters with DO concentrations of less than 3.0 mg/l (Moyle 1976). They feed in a variety of locations within a lake, including shallow water, on the bottom, in midwater aquatic vegetation and on the surface. All species generally spawn in shallow waters 1-3 meters deep. The northern squawfish is an exception, as it usually spawns in groups at depths of approximately 12 meters (Patten and Rodman 1969). Therefore, even if upstream BOD_5 and ammonia loads contribute to the de-oxygenation of the deeper waters at Long Lake, resident fish species productivity probably would not be impaired.

Alternative A. This alternative would increase the Spokane treatment plant effluent volume from 31.5 MGD to 44 MGD by 1992 and to 62 MGD by 2002. Eighty-five percent of influent phosphorus would be removed during both summer and winter prior to discharge.

Phosphorus Increases. Total phosphorus loading at the Spokane STP would increase to 346 pounds per day by 1992 and 487 pounds per day by 2002 (Table 2-5). Based on recently revised data, the maximum permissible loading to Long Lake from all sources would be 507 pounds per day (Washington DOE 1981a). Assuming that all treatment plants on the Spokane River are achieving 85 percent removal of influent phosphorus and all other sources contribute 168 pounds per day, the total phosphorus load to Long Lake would be 597 pounds per day by 1992. This value is 90 pounds per day higher than DOE's suggested maximum loading.

If a phosphorus allocation scheme is implemented which only requires waste treatment facilities to reduce loading, the Spokane STP could only discharge 273 pounds per day, 73 pounds per day less than projected under this alternative. All waste treatment facilities would have to achieve 88 percent removal of influent phosphorus to reduce loading to permissible levels. This result would only be necessary if other phosphorus discharges are allowed to continue at current levels. If, for example, industrial dischargers transport effluent to the waste treatment facilities rather than discharge directly to the river, maximum permissible loading could be increased at the treatment facilities.

By 2002 phosphorus loading to Long Lake would increase to 725 pounds per day (Table 2-5). This value is 218 pounds per day greater than the suggested maximum level (Table 2-5). Based on the allocation scheme presented previously, Spokane would have to reduce to 297 pounds per day, provided loading from other sources remains constant. The STP's would thus have to achieve 91 percent removal of influent phosphorus to reduce loading to permissible levels.

Nitrogen Increases. Total nitrogen loading would increase to 7,058 pounds per day by 1992 and 9,945 pounds per day by 2002. These increases should not have any significant adverse effects on Long Lake water quality as long as phosphorus remains the limiting nutrient. Algal production immediately downstream from the outfall site could be enhanced.

Zinc. Zinc concentrations would increase from .0930 mg/l to .0942 mg/l by 1992 and to .0959 mg/l by 2002 under low summer flow conditions (Tables 2-7 and 2-8). Existing river concentrations already exceed EPA 24-hour average criteria of .047 mg/l thus any increase regardless of how insignificant would have an adverse impact on fish productivity. At 30-day 1-in-10 year low flows the 24-hour average criterion would be exceeded during every month of the year (Table 2-9). The maximum EPA criteria of .180 mg/l would not be exceeded under any flow conditions. However, mortality due to zinc and heavy metals in general is more severe in the embryonic and fry stages (U. S. EPA 1976). The 96 LC_{50} value for fry of cutthroat trout has been reported to be as low as 0.09 mg/l (Rabe and Sappington 1970) and 0.10 mg/l for chinook salmon (Chapman n.d.). Thus, even through EPA maximum criteria would not be exceeded, acute toxicity concentrations for the more susceptible salmonid fish species may be reached.

Copper. Under low summer flow conditions copper concentrations would increase to .0043 mg/l by 1992 and to .0048 mg/l by 2002. Neither value exceeds the 24-hour average criteria of .0056 mg/l. At 30-day 1-in-10 year low flows the 24-hour average criterion would not be exceeded during any month by 1992, but would be exceeded during August and September by 2002 (Table 2-14).

Under Q_{7-10} flow conditions the 24-hour average value would be exceeded (Table 2-11) while in the dilution zone both the 24-hour and maximum criteria would be exceeded (Table 2-13). Thus, effluent discharged during extreme low flow conditions could have a significant impact on fish productivity. The embryonic and larval stages of fish inhabiting areas immediately downstream from the outfall site would be the most seriously affected, as their movement is restricted.

Cadmium. Cadmium concentrations would increase from .0010 mg/l to .0011 mg/l by 1992 and to .0013 mg/l by 2002 under low summer flow conditions (Tables 2-7 and 2-8). At 30-day 1-in-10 year low flows the maximum criterion would not be exceeded by 1992 or 2002 during any month of the year (Table 2-19). Background river concentrations already exceed the 24-hour average criterion of .000012 mg/l. Therefore, any increase would further impact the more sensitive fish species. The maximum EPA criteria of .0015 mg/l would be exceeded under Q_{7-10} flows and in the dilution zone (Tables 2-11 and 2-13).

Table 2-19. Resultant Cadmium Concentrations at 30-Day 1-in-10 Year Low Flows Due to Each Proposed Alternative[3,4]

Month	30-Day[1] 1-in-10 Year Low Flow	Criterion[2] 24-Hour Average	Criterion Maximum	Cadmium Resultant Concentration (mg/l) Alternative									
				1992					2002				
				A	A-1	A-2	A-3	NA	A	A-1	A-2	A-3	NA
January	2,820	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0011	.0011	.0012	.0011	.0010
February	3,971	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0011	.0011	.0011	.0011	.0010
March	4,571	.000012	.0015	.0010	.0010	.0010	.0010	.0010	.0011	.0011	.0011	.0011	.0010
April	5,661	.000012	.0015	.0010	.0010	.0010	.0010	.0010	.0011	.0011	.0010	.0011	.0010
May	6,870	.000012	.0015	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010
June	3,360	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0011	.0011	.0011	.0011	.0010
July	1,308	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0012	.0012	.0011	.0012	.0011
August	742	.000012	.0015	.0012	.0012	.0012	.0012	.0010	.0014	.0014	.0012	.0014	.0011
September	716	.000012	.0015	.0013	.0013	.0013	.0013	.0010	.0014	.0014	.0013	.0014	.0011
October	1,266	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0012	.0012	.0011	.0012	.0011
November	2,058	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0011	.0011	.0013	.0011	.0010
December	2,360	.000012	.0015	.0011	.0011	.0011	.0011	.0010	.0011	.0011	.0012	.0011	.0010

[1] USGS data at Riverside State Park (cfs).

[2] Federal Register, November 28, 1980.

[3] Using river water quality at Riverside State Park averaged over January 1978 to September 1979 (USGS).

[4] Resultant concentrations were calculated by taking into account only the effect of the increase in effluent volume over present conditions.

Lead. River concentrations already exceed the 24-hour average and maximum EPA criteria. Thus, at 30-day 1-in-10 year low flows the maximum criterion would be exceeded throughout the year (Table 2-15). Under low summer flow conditions concentrations would increase only 1 percent by 2002. However, once again, any increase would further impair fish productivity.

Chlorine (Residual). Under low summer flow conditions chlorine concentrations would be .046 mg/l by 1992 and .064 mg/l by 2002 (Tables 2-7 and 2-8). Both values exceed EPA recommended criteria of .003-.005 mg/l for protection of freshwater organisms. The EPA criterion would be violated during each month of the year at 30-day 1-in-10 year low flow (Table 2-16). In the dilution zone chlorine concentrations could exceed .631 mg/l by 2002, a value over 200 times greater than the safety limit (Table 2-13). Most fish species encountering a concentration of this magnitude would suffer almost immediate injury. However, many adult fish are able to detect chlorine in the water and would simply avoid areas immediately downstream from the outfall site (U. S. EPA 1976). Embryonic and larval stages are generally restricted to a particular area in the river. Consequently, an outfall site placed immediately upstream from optimal spawning habitat could significantly affect resident fish species during the summer months.

Un-Ionized Ammonia. Un-ionized ammonia concentrations would increase from .002 mg/l to .008 mg/l by 1992 and to .016 mg/l by 2002 under low summer flow conditions. Neither value exceeds EPA recommended criteria of .020 mg/l for protection of freshwater organisms. Resultant concentrations based on the effects of the entire effluent volume at 30-day 1-in-10 year low flows would exceed criteria from July through October by 1992 and July through November by 2002 (Table 2-17). Resultant concentrations based on only the increase in effluent volume over existing conditions would not exceed criteria by 1992 for any month but would exceed criteria from July to October by 2002 (Table 2-18). Un-ionized ammonia concentrations in the dilution zone would exceed .28 mg/l by 2002. This concentration exceeds the 96 LC_{50} value for many freshwater species (Willingham 1976).

Dissolved Oxygen Decreases. BOD loading would increase from approximately 5,526 pounds per day to 7,720 pounds per day (40 percent) by 1992 and to 10,878 pounds per day (97 percent) by 2002 under low summer flow conditions (Table 2-6). Concentrations would increase from the existing level of 2.9 mg/l to 3.128 mg/l by 1992 and 3.453 mg/l by 2002 (Tables 2-7 and 2-8).

Total ammonia loading under low summer flow conditions would be 2,022 pounds per day by 1992 and 2,849 pounds per day by 2002 (Table 2-6). Resultant concentrations would be .250 mg/l and .466 by 1992 and 2002, respectively.

Fish species inhabiting the flowing portions of the river should not experience significantly decreased DO concentrations. However, fish restricted to the impounded portions of the river could be exposed to concentrations below the 8 mg/l standard especially during the summer months.

Suboption A-1. From a water quality perspective this suboption is virtually identical to the previous Alternative A except phosphorus removal would only be implemented from April to October rather than year-round. Influent phosphorus loads would only undergo secondary treatment from November to March, resulting in a seven-fold increase in effluent phosphorus concentrations over those during the summer period (Table 2-4).

As long as algal growth in Long Lake is limited by phosphorus only during the summer period and phosphorus discharged during the remainder of the year is unavailable to algae during the growth season, phosphorus removal would be unnecessary during the winter months. The seasonal variations in chlorophyll a concentrations in Long Lake prior to AWT indicate that algal growth during winter and early spring are controlled by physical factors other than phosphorus, such as low temperature, high flushing rate, and high sediment loads (Washington DOE 1981). Thus, as long as phosphorus discharged in winter and early spring is not released from the lake sediments, the effects of Suboption A-1 would be identical with Alternative A.

Thomas and Soltero (1977) showed that clay particles entering the lake during periods of high flow (April-June) seal off the sediments, thereby preventing recycling of phosphorus. The reduction in chlorophyll a concentrations following AWT support this hypothesis.

The DOE (1981) study states that at current phosphorus loading rates to Long Lake, a mean seasonal chlorophyll a concentration in the lake of 10 μg/l could be maintained if phosphorus removal at the Spokane STP was discontinued from November through March. This conclusion assumes among other things that during April-October the Spokane plant is achieving 90 percent phosphorus removal or all waste treatment plants on the river are achieving 85 percent phosphorus removal.

However, under Suboption A-1 effluent volume would increase by 40 percent by 1992 and 97 percent by 2002. With the projected 1992 phosphorus loading, it would be necessary to initiate 90 percent phosphorus removal as early as March 1 in order to reach the 10 µg/l chlorophyll a concentration in the lake by June 1, the beginning of the critical algal growth season (Washington DOE 1981). These conclusions, however, are dubious in light of information received after publication of the Washington DOE waste allocation study. Due to the underestimation of the phosphorus load contributed by the Little Spokane River and problems with 1980 water quality data, the Dillon/Soltero model for Long Lake was altered (Washington DOE 1981a). The ultimate result was to increase the value for maximum permissible loading to Long Lake. Whether or not this new information would significantly change the date for initiation of phosphorus removal is unknown at this time,

Thus, Suboption A-1 would have the potential for greater adverse impacts than Alternative A with regard to increased phosphorus loading. All other pollutant increases such as heavy metals and toxins, would be in quantities identical to Alternative A and would have the same impacts as discussed previously.

Suboption A-2. This suboption would be identical to Suboption A-1, except that volume of effluent discharged in 2002 would be different. Forty-four MGD of effluent would be discharged between April and October with any effluent volume exceeding 44 MGD stored until the winter months. Consequently, a volume of approximately 66 MGD attributable to the treatment plant effluent and storage release, would be discharged to the river during the winter months (Kermeyer pers. comm.).

Between April and October 346 pounds of phosphorus per day would be discharged by 1992. This amount would not change by 2002. To maintain the 10 µg/l chlorophyll a concentration in the lake, the maximum permissible loading at the Spokane plant would be 273 pounds per day by 1992 and 280 pounds per day by 2002 (Table 2-5). Both values exceed permissible loading, provided a phosphorus allocation scheme is implemented which only requires STP's to reduce loading. This suboption, however, is advantageous over Alternatives A and A-1 as total phosphorus loading by 2002 in the summer months would be 29 percent lower.

During the winter months effluent volume would be approximately 2 MGD greater than Suboption A-1. Consequently, if phosphorus reduction does not commence prior to April 1, mean chlorophyll a concentrations in Long Lake have the potential of exceeding 10 µg/l.

Concentration increases of heavy metals, toxic substances, and parameters causing de-oxygenation would produce the same adverse effects as previously mentioned for Alternative A by the year 1992. However, effluent volume would remain at 44 MGD by 2002 during the summer months whereas Alternative A proposes an increase to 62 MGD by 2002. The summer months represent the period when fish are most susceptible to pollutants. By maintaining effluent volume at 1992 levels, the severity of the adverse impacts would be significantly less than those of Alternative A.

Suboption A-3. This suboption would be identical to Suboption A-1, except effluent phosphorus concentrations would be reduced from April to October and chlorine and un-ionized ammonia concentrations would be reduced if river levels exceed criteria.

This suboption would be the most advantageous with regard to phosphorus loading to Long Lake. The projected loadings at the Spokane plant would be at permissible levels necessary to maintain the 10 μg/l chlorophyll a concentration in the lake (Table 2-5). However, if phosphorus reduction is not initiated until April then levels above 10 μg/l could ensue.

Other pollutant parameters would be in similar quantities and produce similar results as previously discussed for Alternative A. If, however, concentrations of chlorine or un-ionized ammonia during the summer months exceed recommended criteria, methods would be implemented to reduce these concentrations to acceptable levels. Consequently, Suboption A-3 has distinct advantages over Alternative A, Suboption A-1 and A-2, and no-action from a water quality perspective.

Suboption A-4. This suboption would use in-lake treatment to improve Long Lake water quality. One or more of the following methods could be used: chemical control, mechanical treatment, and deep water withdrawal from the lake. The effect of chemical control or mechanical treatment on the water quality of Long Lake would depend on the frequency, rate, and area of application and the efficiency of the method. Deep water withdrawal from Long Lake through deepening of penstock outlets at Long Lake Dam could remove oxygen-demanding substances from the Long Lake hypolimnion and decrease phosphorus accumulation within the lake. It is not anticipated that water level fluctuations would be significantly altered by this process.

All of the methods proposed for this suboption have demonstrated their effectiveness in other locations. However, their feasibility, design, and operation criteria for use at Long Lake have not been determined. Until these are known the effect of this suboption on Long Lake cannot be assessed.

Suboption A-5. This suboption would use a well structured water quality management program to provide options to evaluate and control water quality in the Spokane River and Long Lake. This management program could include a combination of monitoring and special studies to expand the water quality data base, investigate specific contaminants and their cause/effect, and track the seasonal and future fluctuations in water quality. The results of this effort could be used to identify the implementation date of Suboptions A-1 through A-4.

The water quality management program could also include the use of administrative controls, local ordinances, and nonpoint source operational controls in order to reduce phosphorus loads at the Spokane STP and in the Spokane River. This program might include a reduction or ban of phosphates in all household detergents. Current investigations indicate 30-40 percent of all influent phosphorus at the Spokane STP is the result of household detergents (Economic and Engineering Services 1980). Street cleaning practices could be improved to provide a reduction in phosphorus loadings in urban runoff; contributions from this source, however, are thought to be minimal. Urban and rural runoff sources may be controlled, especially new construction developments, agricultural fertilization, and farm animal wastes. The respective contributions of these nonpoint sources have not been quantified.

The effect of this suboption on the water quality of the Spokane River and Long Lake cannot be accurately assessed. However, any reductions in phosphorus loadings to the river would be beneficial to the present water quality. The phosphorus load reduction would depend on the present phosphorus contribution from nonpoint sources, and the extent and effectiveness of a phosphate detergent ban and/or control of nonpoint sources.

Mitigation Measures

The following list includes potential water quality and fishery impact mitigation measures.

Continuation of On-going Measures.

- A phosphorus load allocation should be established for the Spokane River basin including a set load reduction for the Spokane STP.
- Nutrient and algal levels in Long Lake should continue to be monitored on a regular basis.

- Continue the synoptic water quality studies that monitor the Spokane combined sewer overflows (City of Spokane/DOE) and other specific waste discharges to the Spokane River (EPA/DOE).

- Continue routine monitoring of the Spokane River (WSU/USGS).

Initiation of Future Studies.

- Improve the accuracy of the phosphorus/chlorophyll a model for Long Lake by defining the loading rate, loss rate and regeneration rate from storage of total phosphorus.

- Identify the sources, distribution, and fate of major toxic substances in the river and aquifer, and recommend protection criteria and abatement actions for any specific problems in the Spokane River basin.

- Define any effects of trace metal reduction on algal production in Long Lake.

- Identify optimal spawning and rearing habitat for key fish species inhabiting the river.

- Considering that river concentrations of various pollutants already exceed EPA 24-hour average criteria, fish studies, including bioassays, should be conducted to determine if resident fish species productivity is actually being impaired. Through this bioassay work, establish chlorine, ammonia and heavy metal tolerance limits for resident fish.

- Obtain additional input data for a steady-state model of the Spokane River which provides: 1) quantitative relationships (flow and concentration) between the aquifer and river on a seasonal basis; 2) quantitative relationships for nonpoint source pollutant load contributions to the river for a single event, seasonal, and annual basis; and 3) a defining of changes in pollutant concentrations from point of discharge to Long Lake.

- Obtain additional input data for a DO model for Long Lake which provides quantitative relationships between the hypolimnetic DO levels and the effects of river flow, reservoir circulations, and sediment oxygen demand.

- Obtain additional input data for DO model (QUAL-II) which provide quantitative relationships between the river DO (above and below Long Lake) and the nitrogenous oxygen demand, sediment oxygen demand, and algal respiration.

- Conduct a survey in the upper river and in and below Long Lake to determine the effect of low DO on the spatial and temporal abundance, species composition, and biomass of the fish community.

- Obtain baseline data on the spatial and temporal effects of aquatic macrophytes in Long Lake and beneficial uses and control measures.

- Determine the magnitude of the attenuation of phosphorus and other compounds discharged upstream from the Spokane STP.

General Measures.

- Effluent discharged into the river should be adequately diffused to alleviate any localized effects.

- Plans should be implemented to achieve appropriate water quality criteria.

- A monitoring program should be established which samples water quality downstream from the waste treatment facilities. Only those pollutants which exceed acceptable levels should be assessed. If determined that a concentration of a specific pollutant has reached an intolerable level, then additional treatment of the effluent should be required or alterations in the timing of discharge (i.e., storage) should occur.

Project Economics

Introduction

Many of the comments on the Draft EIS indicated that project costs were not adequately defined. While all of the various cost elements were identified, they were not summarized at one single point in the report so that the individual could understand his/her total financial commitment. The following pages update the cost elements of the original alternatives and those that are still being considered in the planning process. This includes a summary of costs to the individual homeowner.

Cost Comparison of Original Project Alternatives

The CWMP described six basic planning options, Alternatives A through F. Costs were presented for the entire project and for first phase construction and operation. Estimated user fees needed to support first phase construction and operation and maintenance costs were also developed. These cost comparisons are summarized in Table 2-20.

New Project Suboption Costs

Chapter 1 describes several suboptions of the county's preferred Alternative A. These are modifications to Alternative A that could be implemented to reduce the water quality impacts of A. Economic and Engineering Services, Inc. (1980) projected costs for the suboptions in a supplementary report. These costs would be additive to those already described (Table 2-20) for Alternative A. Table 2-21 lists the suboption capital, operation and maintenance, and user costs. The engineers included a "no-action" suboption, which assumed that present waste disposal practices over the aquifer would eventually lead to a need for water supply treatment.

Summary of Costs

As mentioned in the Introduction to this section, many readers of the Draft EIS did not feel the user costs of the projects were adequately presented. The several cost elements that pertain to users were presented on different pages of the report. Table 2-22 combines all of the pertinent user costs elements to rectify this shortcoming. The actual costs will vary from one location to the next, depending on local topographic and soils features, housing density and other features, but the data in Table 2-22 represent a typical 5-year cost for a dwelling in a medium-density area. The costs include all factors except financing charges for the major Phase I facilities.

If any of the suboptions to Alternative A are implemented, the monthly user fee for that alternative will be increased. Table 2-21 lists those monthly increases for the year 2002.

In developing a financing plan for the county's preferred alternative, Economic and Engineering Services, Inc. (1980a, Table V-2) added in the financing charges for the major capital expenditures of Phase I. As a result, the Alternative A monthly user charge was raised from $8.56 to $9.28. This is an $8.64 annual increase in user fees. If financing charges were added to the costs of the other alternatives, a similar increase in cost could be expected.

Table 2-20. Summary of Costs for Original CWMP Alternatives[1]

		Present Worth Cost Comparison[2]			Phase I Costs		Phase I User Costs[5]
Plan Alternative	Description	Capital	O&M	Total	Capital[3]	Annual O&M[4]	$/month/service
A	Regional treatment, all areas to city plant	57,525,000	24,171,000	81,696,000	50,487,000[6]	1,462,400	8.56-all areas
B	Separate treatment, Spokane Valley	83,043,000	25,538,000	108,581,000	84,137,000	1,285,900	10.70-North Spokane 9.08-other areas
C	Separate treatment, North Spokane	63,525,000	24,385,000	87,910,000	60,132,000	684,400	10.75-North Spokane 7.48-other areas
D	Separate treatment, North Spokane and Spokane Valley	92,609,000	24,751,000	117,360,000	95,582,000	1,736,900	10.70-Spokane Valley 10.75-North Spokane
E	Land application, North Spokane and Spokane Valley	86,664,000	28,132,000	114,796,000	96,142,000	1,450,900	9.54-all areas
F	Land application, all areas at Downriver site	96,214,000	26,391,000	122,605,000	107,892,000	2,099,400	8.68-Spokane Valley 10.62-North Spokane

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[1] SOURCE: Economic and Engineering Services, Inc. 1980a.

[2] Present worth costs prepared in accordance with EPA criteria; June 1980 cost level.

[3] Includes costs of treatment, storage basins, interceptors and pump stations; does not include cost of collection system.

[4] O&M costs for treatment, storage basins, interceptors and pump stations; does not include O&M for collection system.

[5] These costs cover only Phase I capital costs and O&M costs for interceptors, pumping, equalization basins and wastewater treatment. They do not include costs for collection system financing, O&M financing, or financing interest charges on all capital costs.

[6] Includes cost of acquiring capacity in the City of Spokane treatment plant and interceptor systems.

Table 2-21

CAPITAL, OPERATION & MAINTENANCE, & USER COSTS (1)
for
SUPPLEMENTAL CWMP DISPOSAL ALTERNATIVES
(ALL COSTS ARE ADDITIVE TO CWMP ALTERNATIVE A)

Sub-Alternatives	Requirement	Project Costs		User Costs
		Capital	O&M/yr (2)	$/mo. (3)
		? Year	2002	2002
A_1 85% Seasonal (4) Phosphorus Removal (Operational Changes Only)	12 month removal		1,360,000	0.65
	7 month removal		795,000	0.38
	5 month removal		568,000	0.27
A_2 Seasonal Storage (Incremental Flow of 18 MGD) (5)	Storage & 100% Power Generation (7)	12,919,000	320,400 (6)	0.28
	Storage & 100% Crop Production (8)	40,210,000	281,900	0.52
	Storage & 50% Power/50% Crop	26,950,000	800,000	0.64
A_3 Sewage Treatment Plant Modifications (Operational & Facility Changes)	85% Phorsphorus Removal/Filtration	10,900,000 (9)	2,920,000	1.57
	Dechlorination	360,000	50,000	0.03
	Ammonia Removal-4 mo.			
	Operational Changes		58,000	0.03
	Breakpoint Chlorination	1,000,000	177,000	0.10
A_4 In-Lake Treatment (Seasonal Control In-Lake)	Chemical Treatment (10)		135,000	0.06
	Mechanical Treatment	?	?	
	Outlet Modification (11)	1,680,000	2,000	0.02
A_5 Water Quality Management	Phosphate Detergent Ban	(12)	374,000 savings	(13) Net Household Expense
	Non-Point Control			
No Action (Contaminated Aquifer/ Water Treatment)	Nitrate Removal	189,000,000	30,700,000	17.73
	Heavy Metals, Nitrate, Organics Removal	302,000,000	35,100,000	21.04
	New Surface Source with Full Treatment	229,000,000	5,900,000	6.48

Table 2-21 (cont'd.)

FOOTNOTES

(1) All Capital and O&M costs are in 1980 dollars.

(2) Estimates based on projected flows in 2002 unless otherwise noted.

(3) Includes annual O&M plus annualized Capital costs but does not include financing costs. All Capital costs annualized for 30 years except sub-alternative A2 and A4 - Outlet Modification where 50 years was used. Approximately 174,000 customers were projected for 2002.

(4) Assumes that 85% phosphorus removal will be satisfactory in 2002.

(5) Flow differential between 44 MGD and anticipated 2002 year flow of 62 MGD.

(6) Net O&M costs shown for all A2 sub-alternatives.

(7) 1059 KW generated during November-March (5 month) at a rate of 5.9¢/KwH.

(8) Uses 5880 acres of land for alfalfa crop production.

(9) Capital costs includes effluent filters, backwash facilities, solids recirculation, and polymer feed equipment.

(10) Assumed four treatments per year over 750 acres (15% of Long Lake) using aerial application of copper sulfate.

(11) Four power penstock inlets submerged approximately 80 feet at Long Lake Dam.

(12) Assumes approximately 35% reduction in phosphorus influent and daily O&M expense.

(13) Approximately $11.10/year expense per household in 1980 dollars due to increased use of bleach, water softeners, and reduced clothing life. Therefore, a $1,931,400 cost to 2002 households or a net annual cost of approximately $1,557,000 in 1980 dollars. Net cost includes savings in treatment O&M. Using an annual O&M savings of $760,000 in 2002 if effluent filtration is used still results in net expense to households of $1,171,000. No allowance given to improved detergent formulation.

SOURCE: Economic and Engineering Services, Inc. 1980.

Table 2-22. Estimated Costs to System Users
($/dwelling unit)

	Major Phase I Facilities Capital and O&M Costs[1]		Collection System Capital and O&M Costs			
Alternative	$/month[2]	5-Yr. Total	$/yr[4]	5-yr. total	House Connector[5]	Total Cost - First 5 Years
A	8.56	513.60	366	1,830	800	3,143.60
B	10.70-NS[3] 9.08-AO	642.00 544.80	366	1,830	800	3,272.00 3,174.80
C	10.75-NS 7.48-AO	645.00 448.80	366	1,830	800	3,275.00 3,078.80
D	10.70-SV 10.75-NS	642.00 645.00	366	1,830	800	3,272.00 3,275.00
E	9.54	572.40	366	1,830	800	3,202.40
F	8.68-SV 10.62-NS	520.80 637.20	366	1,830	800	3,150.80 3,267.20

[1] Costs for Phase I capital and O&M of treatment, storage basins, interceptors, and pump stations; does not include financing of interest on capital expenditures.

[2] SOURCE: Table III-4, Economic and Engineering Services, Inc. 1980a.

[3] NS = North Spokane, AO- all other areas, SV - Spokane Valley.

[4] SOURCE: Table V-2, Economic and Engineering Services, Inc. 1980a; assumes 100 percent ULID financing with a 20-year payback period at an interest rate of 9.5 percent; also assumes gravity sewering at a density of two dwelling units per acre.

[5] Cost of connecting house to collection system in the street will vary with location of house in relation to street and a variety of other factors; $800 represents the average of a $300-$1,300 range in cost received from Maxwell (pers. comm.).

Financing

The CWMP recommends financing the local increment of the interceptor system, storage basin and pump station costs with a general obligation bond. This bond would be repaid by assessing all property in the county at an estimated rate of $0.52 per $1,000 of assessed value (Economic and Engineering Services, Inc. 1980a). This rate of assessment assumes that a $20 million grant would be received from DOE and EPA in support of the Phase I efforts. At present, this level of state and federal grant support is unlikely. Therefore, the rate of local assessment would have to be increased or the size of the Phase I project would have to be scaled down. A third option would be to seek other sources of financing. The CWMP considered partial or complete financing through ULID assessments. At 100 percent ULID financing, the assessment rate was estimated to be $43.29 per acre per year (Economic and Engineering Services, Inc. 1980a). The facilities plan/financing plan comparisons and recommended approach are attached as Appendix A.

Recent discussions with local officials indicate that a scaled down Phase I project may be pursued. A final determination has not been made and no specific plans have been drawn for a smaller Phase I. The Board of County Commissioners is also considering the use of councilmanic rather than general obligation bonds to finance the local share of the project (Spoerhase 1981).

Relationship of the CWMP to the 208 Water Quality Management Plan

The CWMP is a domestic wastewater facilities plan developed with the aid of federal funding under Section 201 of the Clean Water Act. Section 208 of the Clean Water Act is the basis for regional water quality management plans that deal with a wide variety of water pollution sources, including both point and nonpoint sources (e.g., urban runoff, agricultural runoff, commercial and industrial sources, domestic wastes, and solid waste and sludge disposal). The CWMP and the Spokane area's Water Quality Management Plan (208 plan) therefore address slightly different subject matter, but have a similar goal: water pollution control.

The objective of all 201 planning, including Spokane County's CWMP, is to identify cost-effective and environmentally sound methods of collecting, treating, and disposing of domestic and industrial wastewater in order to minimize surface and groundwater pollution. Spokane County's 208 plan has sought to remedy a groundwater pollution problem being created in part by domestic waste disposal practices in use in urbanized county areas surrounding the City of Spokane.

The Spokane area 208 plan, which preceded the 201 plan, helped to identify this domestic source of groundwater pollution. It also developed a general framework for management and control of other pollutant sources likely to affect the Spokane Valley Aquifer and the Spokane River. The other pollutant sources include urban runoff over the aquifer; runoff from commercial and industrial facilities using critical substances; agricultural runoff and chemical usage; seepage from garbage dumps, landfills and sludge disposal sites; and excavations that penetrate the aquifer.

EPA's role in the 201 and 208 programs is to administer funds in support of local efforts, and to review final plans to ensure conformance with federal regulations. Under the 201 program, this review must occur prior to providing additional federal funding for plan implementation. The local jurisdictions are responsible for actual implementation of plan recommendations. This EIS is part of EPA's 201 plan review process.

The CWMP (201 plan) and the EIS have focused their analysis on domestic wastewater pollution problems. The plan being recommended by the CWMP engineers will eventually remove one source of pollution from the Spokane Valley Aquifer, namely on-site domestic waste disposal. On-site disposal threatens to contaminate the aquifer not only with nitrates, but also with a wide range of other potentially toxic substances (pesticides, cleaning compounds, bacteria, viruses, others). Other potential sources of surface and groundwater contamination will remain, but the 208 plan has developed a management framework and a series of recommendations to curb these other sources. The CWMP EIS focused its impact analysis on domestic sources of pollution, but also identified other potential sources related to urbanization. Because the 208 plan is the intended mechanism to address the other pollutant sources, the EIS did not develop a detailed environmental analysis of urban runoff, toxic spills, landfills and other nonpoint pollutant mechanisms. The EIS was scoped to identify the risks of pollution that may indirectly result from the wastewater facilities plan, and to identify the agencies responsible for management and regulation of other pollutant sources. Because public comment on the Draft EIS indicated a strong concern for control of nonpoint pollutant sources, a brief summary of control responsibility is presented below.

The domestic wastewater disposal problem (a point source) is addressed by the CWMP. The effectiveness of this plan must be analyzed by EPA, DOE, and Spokane County before it can be set into action. EPA reviews the plan through the EIS process; DOE is ultimately responsible for approving the facilities plan in light of federal and state regulations and water quality standards. DOE also makes grant awards for further work on the plan. The Spokane County Board of County Commissioners must assure itself that the selected plan will solve the area's pressing water quality problems and at the same time be consistent with other programs to protect the area's water resources.

Pollution from urban runoff (a nonpoint source) was addressed in the 208 plan. As stated in the Draft EIS, this can be a major source of groundwater contamination. EPA approved the 208 plan with conditions on February 27, 1981. One of the conditions stipulated that "An agency to oversee, direct, encourage, and coordinate Plan implementation on a permanent basis, must be selected and recommended to the Governor and EPA for approval" by July 31, 1981 (Dubois pers. comm.). This selected agency will be responsible for moving the 208 plan recommendations for urban runoff control toward implementation. It is EPA's position that the 208 recommended control strategies can effectively reduce the groundwater contamination threat posed by urban runoff, but implementation is a local government responsibility.

Control of industrial pollutant sources in the Spokane area is the responsibility of several agencies. EPA is in the process of inventorying companies that produce, store, transport or dispose of hazardous wastes. This has been authorized by the Resources Conservation and Recovery Act (RCRA). Regulations controlling the development, use and disposal of these substances are being prepared by EPA. Spokane County and DOE have the responsibility to direct the hazardous waste storage and disposal practices of new industry established over the aquifer. DOE must issue a new source NPDES permit to all new industrial waste discharges. The county must approve the plans, including storage and disposal facilities, of all new industry locating in the area. These agencies can also stipulate runoff control measures to be used by industry.

Finally, the variety of potential pollutant sources that are associated with growth in general are ultimately controllable through management of growth. The Spokane County Board of County Commissioners and the Spokane County Planning Commission are the principal growth management agencies in the area. The county's comprehensive land use plan and its implementation determine the location and nature of development over the Spokane Valley Aquifer. The land use plan should reflect the water quality protection measures highlighted in the county's 208 plan. This includes control of sprawl over the aquifer, encouragement of in-fill, and strict limitations to development outside of the PSSA. One of the three conditions of EPA approval of the county's 208 plan is that the 208 plan "be adopted as a portion of the City and County Comprehensive Plans. EPA has determined that this is essential to ensure effective [208] Plan implementation" (Dubois pers. comm.). This action must be taken prior to December 31, 1981.

In summary, EPA recommends that local and state agencies should implement the 208 plan nonpoint source pollution control recommendations as a companion effort to the CWMP. The local land use plans should be modified to reflect the growth control mechanisms embodied in the 208 plan.

Consistency Between the CWMP and the County "Generalized Comprehensive Plan"

EPA policy requires that wastewater facility plans be in conformance with local land use plans. The consistency between the CWMP and the county's "generalized comprehensive plan" was evaluated in September 1980 and presented in the Draft EIS. Since that time, the county has adopted a final "generalized comprehensive plan". Based on a review of the final comprehensive plan, certain issues related to the consistency between the two plans appear to be as yet unresolved.

Unlike the preliminary "generalized comprehensive plan" the final comprehensive plan contains a land use map which indicates the areas where policies for each land use category apply. Although a few minor changes have been noted from the land use map shown in the Draft EIS, the revised map is essentially the same as originally presented.

The adopted county comprehensive plan provides general development policies for guiding future growth. Specific policies in the comprehensive plan concerning the location and timing of future development, would better assure that implementation of the CWMP can accomplish stated fill-in objectives. This would reduce the possibility of fostering a land use pattern which would perpetuate the existing sprawl conditions.

Chapter 3

EPA RECOMMENDED ACTION

Recommended Project

After review of the Spokane County CWMP (Economic and Engineering Services, Inc. 1980a) and supplemental data prepared subsequent to issuance of the Draft EIS (Economic and Engineering Services, Inc. 1980; 1980b), EPA has decided to approve, with certain conditions, the county's proposed project (Alternative A).

Phase I of Alternative A includes trunk interceptors and related pumping facilities to connect unsewered portions of North Spokane, Spokane Valley, and Moran Prairie with existing City of Spokane trunk sewers. The flows would be transported to the Spokane treatment plant for treatment and discharge to the Spokane River. Alternative A also includes construction of wastewater storage/equalization basins in North Spokane and Spokane Valley.

At the present time the state's priority list for EPA construction grant funds lists the North Spokane interceptor, connecting North Spokane with the city interceptor system, for $1.23 million in fiscal year 1985 or 1986. At a later date, if additional federal funds are made available through the Clean Water Act, Spokane County may apply for further grants to design and construct subsequent phases of the CWMP. Further environmental analysis will be necessary to comply with the National Environmental Policy Act.

Conditions of Approval

EPA intends to place two conditions on any award of Section 201 grant funds to Spokane County. The first condition relates to the water quality implications of the increasing Spokane waste discharge. The State of Washington and Spokane County should cooperatively continue monitoring of the water quality of the Spokane River and Long Lake downstream from the city's waste discharge. The monitoring program should be designed to determine allowable concentrations of various pollutants, including chlorine and un-ionized ammonia, and to establish waste load allocations to more fully assess the impact of the discharge on the Spokane River fishery. This is consistent with DOE's recent determination that dechlorination and ammonia control must be implemented by June 1983 unless monitoring data indicate it is not necessary.

The second grant condition is necessary to comply with the National Historic Preservation Act. Prior to issuing any additional Section 201 grants for the CWMP, Spokane County must complete a records search and field survey of all selected wastewater facilities sites. This should include interceptor routes, pump station locations and equalization basin sites. The research and surveys should be conducted by a qualified professional archeologist. The findings of the survey must be submitted to the Washington State Historic Preservation Office and the Advisory Council on Historic Preservation for their review, along with a determination of effect.

EPA also believes that it is imperative to embark on implementation of nonpoint source pollution controls as identified in the Spokane County 208 plan. An implementing agency or agencies should be identified and work should proceed to fully develop and implement measures to reduce the water quality impacts from urban runoff, industrialization and storage and transport of toxic materials.

In addition to these grant conditions and recommendations, EPA suggests that a variety of mitigation measures identified in the Draft EIS and in Chapter 2 of this Final EIS be incorporated into the project. These measures are as follows:

- proceed with the water quality monitoring and additional studies defined in the revised Water Quality Analysis section of Chapter 2

- continue groundwater quality monitoring efforts across the Spokane Valley Aquifer in order to document changes in the quality of the local water supply

- discontinue disposal of wastewater sludge at the city's northwest landfill in favor of reuse or disposal off the aquifer

- establish and maintain an industrial connections inventory consistent with the Clean Water Act's pretreatment requirements

- enforce pretreatment requirements on any industrial or commercial discharges to the CWMP collection system

- minimize exfiltration from wastewater interceptors over the aquifer and the Spokane River by closely monitoring and controlling the quality of interceptor construction and periodically inspecting the interceptors for leaks

- establish rigorous odor-control procedures to be used in the operation and maintenance of all wastewater equalization basins

- buffer equalization basins from adjacent land uses through the use of berms or vegetative screens

- to the extent possible, encourage preservation of prime agricultural lands

Significant Adverse Impacts Likely to Occur in Spite of Mitigation

Several significant adverse impacts are likely to occur with implementation of Alternative A in spite of the mitigation measures recommended by EPA. These impacts are summarized below:

- algal production in the Spokane River and Long Lake below the City of Spokane waste discharge will increase as the level of nutrients in the river increases

- chlorine levels in the effluent plume and in the Spokane River below the waste discharge will exceed EPA 24-hour criteria for protection of freshwater biota under low river flow conditions in summer months; the anticipated concentrations could have a major impact on the entire fish productivity of waters below the outfall

- un-ionized ammonia and heavy metal concentrations in the effluent plume of the Spokane waste discharge will exceed EPA 24-hour criteria for protection of freshwater biota under low river flows in summer months; these concentrations are likely to be detrimental to those early life stages of fish that are relatively immobile (eggs, fry) and, therefore, unable to move away from the plume

- odor and aesthetic impacts could affect residential land uses surrounding the proposed Spokane Valley wastewater equalization basin

- county residents hooking into the new wastewater system will face additional costs; this will include a collection system hookup fee of from $300-$1,300, a ULID assessment to pay for the collection system averaging $366 per year (will vary considerably with dwelling density), and a monthly user fee estimated to be $8.56

- urban runoff over the Spokane Valley Aquifer will increase as development occurs
- chemical and energy use for wastewater treatment will increase significantly due to increased volumes of influent

Chapter 4

LETTERS OF COMMENT ON THE DRAFT EIS AND EPA RESPONSES

Introduction

The Spokane County CWMP Draft EIS was available for public review from February 21, 1981 to May 29, 1981. During this period EPA, Region 10 received 30 letters of comment on the document. Each of these letters is presented in the following pages, and responses accompany each letter. The section is organized as such: each individual comment on each letter has been given a number in the letter's left-hand margin. Following the letter, these comments are responded to in numerical order. If the comment has been responded to in the text of an earlier chapter, the reader is referred to that chapter. The letters are organized into groups of federal, state and local agencies, and individuals. Material appended to the letters of comment has been included in Appendix B.

Advisory Council On Historic Preservation

1522 K Street, NW
Washington, DC 20005

Reply to:

Lake Plaza South, Suite 616
44 Union Boulevard
Lakewood, CO 80228

April 20, 1981

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APR 22 1981
ENVIRONMENTAL EVALUATION BRANCH

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

1 Thank you for your recent undated request for comments on the environmental statement for Spokane County Comprehensive Wastewater Management Plan in Washington. Pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 and the Council's regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800), we have determined that your draft environmental statement does not contain sufficient information concerning historic and cultural resources for review purposes. Please furnish the following data indicating compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 90 Stat. 1320).

The environmental statement must demonstrate that either of the following conditions exists:

1. No properties included in or that may be eligible for inclusion in the National Register of Historic Places are located within the area of environmental impact, and the undertaking will not affect any such property. In making this determination, the Council requires:

   - evidence that you have consulted the latest edition of the National Register (Federal Register, February 3, 1981, and its monthly supplements);

   - evidence of an effort to ensure the identification of properties eligible for inclusion in the National Register, including evidence of contact with the State Historic Preservation Officer, whose comments should be included in the final environmental statement. The State Historic Preservation Officer for Washington is Mr. Jacob Thomas.

2. Properties included in or that may be eligible for inclusion in the National Register of Historic Places are located within the area of environmental impact, and the undertaking will or will not affect any such property. In cases where there will be an effect, the final environmental impact statement should contain evidence of compliance with Sectinn 106 through the Council's regulations.

Should you have any questions, please call Brit Allan Storey of my staff at (303) 234-4946, an FTS number.

Sincerely,

Louis S. Wall
Chief, Western Division
of Project Review

Response to Comments From the Advisory Council on Historic Preservation

1. In order to comply with the requirements of Section 106 of the National Historic Preservation Act, Spokane County forwarded preliminary planning descriptions and planning area maps to the Washington State Historic Preservation Office (SHPO). After conducting a records search, the SHPO indicated that the identified wastewater facilities were not located on known cultural resources sites. The SHPO noted, however, that some of the areas had high potential for occurrence of archeological resources. Once specific facilities sites have been selected, an intensive records search and field survey has been recommended.

Prior to issuing any further grant assistance to Spokane County for CWMP implementation, the county must complete the necessary field surveys for proposed facilities and the information must be forwarded to the Washington SHPO and the Advisory Council on Historic Preservation for their review. EPA has included a recommended grant condition to this effect.

United States
Department of
Agriculture

Soil
Conservation
Service

Room 360
U.S. Courthouse
Spokane, Washington 99201

April 6, 1981

Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

The Soil Conservation Service has reviewed your draft environmental impact statement for the Comprehensive Wastewater Management Plan, Spokane County, Washington.

It appears the concerns of the SCS have been addressed and we have no comments to offer at this time.

Sincerely,

R.B. Tootell

LYNN A. BROWN acting
State Conservationist

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BRANCH

The Soil Conservation Service
is an agency of the
Department of Agriculture

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX C-3755
SEATTLE, WASHINGTON 98124

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NPSEN-PL-ER

6 March 1981

Ms. Kathryn M. Davidson
Environmental Evaluation
  Branch, M/S 443
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

We have reviewed the draft environmental impact statement on the proposed Spokane County Comprehensive Wastewater Management Plan, Washington, with respect to the U.S. Army Corps of Engineers' areas of responsibility for flood control, navigation, and regulatory functions. We have no comments.

Thank you for the opportunity to review this statement.

Sincerely,

Sidney Knutson

SIDNEY KNUTSON, P.E.
Asst Chief, Engineering Division

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
Atlanta, Georgia 30333
(404) 262-6649

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APR 6 1981
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BRANCH

March 31, 1981

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Spokane County Comprehensive Wastewater Management Plan. We are responding on behalf of the Public Health Service.

We have reviewed this DEIS for possible adverse health effects, and on that issue we have no comments to offer. We believe the impact of the proposed action will be positive and will eliminate many future potential health problems that could result from septic tank failures.

1 It was noted that the DEIS does not consider reducing per capita water use in conjunction with any of the alternatives discussed. Local codes should be reviewed and revised to require water saving devices in all new construction and in the replacement of existing fixtures. The final EIS should address this issue.

2 Although the DEIS mentions the 208 Plan recommendations on page 142 that growth be restricted in the PSSA through land use controls until services are available in that area, the statement does not consider that recommendation in the discussion of alternative measures.

3 While construction of adequate public sewerage facilities will be an important step forward in public health in Spokane County, we feel water conservation measures and the prevention of urban sprawl are also important elements of any final plan development.

Thank you for the opportunity of reviewing this DEIS. We would appreciate receiving a copy of the final statement when it is issued.

Sincerely yours,

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Center for Environmental Health

Response to Comments From the U. S. Department of Health and Human Services

1. In reviewing the CWMP, the Washington DOE recommended that additional investigations be made into flow reduction and water conservation potentials in Spokane. EPA strongly supports the use of local building code changes and ordinances to encourage water conservation. Adoption of appropriate conservation measures could be made a condition of DOE's grant award should the findings of the project engineers warrant such action.

2. EPA's position regarding implementation of 208 Plan land use controls is included in the section of Chapter 2 titled Relationship of the CWMP to the 208 Water Quality Management Plan.

3. Comment noted.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGIONAL OFFICE
ARCADE PLAZA BUILDING, 1321 SECOND AVENUE
SEATTLE, WASHINGTON 98101

April 3, 1981

REGION X

IN REPLY REFER TO:
10C

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APR 6 1981
ENVIRONMENTAL EVALUATION
BRANCH

Ms. Kathryn M. Davidson
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue, M/S 443
Seattle, Washington 98101

Dear Ms. Davidson:

Subject: Draft Environmental Impact Statement
Spokane County Comprehensive Wastewater
Management Plan

We have reviewed the statement dated January 8, 1981.

As you know we have been working very closely with you to assure the protection of the sole source aquifer. This is evidenced by the Memorandum of Agreement currently in force. We also are supportive of the 208 Water Quality Management Plan and our program actions have been to support the growth management efforts of local governments.

1 We feel strongly that the Spokane County Wastewater Management Plan (CWMP) should be consistent with other local management efforts to plan orderly growth. Thus, we have some concerns that certain priority service areas are in land categories designated as low density in the comprehensive plan and unlikely to be able to support a central wastewater collection system. Is it possible to identify in the final impact statement the level of density needed to support a collection system and to revise the priority areas accordingly? We believe this will be very helpful in the future implementation of our projects.

The Seattle Area Office has program jurisdiction in the geographic area and they have comments with respect to growth implication as follows:

Growth Implications - page 129 - The first part deals primarily with a comparison of the different population projections. The remainder compares the CWMP with existing land use policies.

2 The conclusions of this section states the CWMP, which is not intended to be a land use planning or land use policy document, has adopted the spirit of the 208 phase recommendations of limiting sprawl by designating a priority sewer area. The text also acknowledges that low density developments are generally not considered adequate for sewering.

AREA OFFICES
Portland, Oregon • Seattle, Washington • Anchorage, Alaska • Boise, Idaho

2 The CWMP can have a significant influence on growth management and density of development. Thus, we recommend a land utilization and holding capacity approach to estimate the amount of land at an assumed density that would make the CWMP economically feasible.

This concludes our Seattle Area Office and our comments.

We thank you for the opportunity to review your statement.

Sincerely,

for

Gordon N. Johnston
Regional Administrator

cc: Ed Moger, HUD
Richard Brinck, HUD
Dick Moore, HUD

Response to Comments From the U. S. Department of Housing and Urban Development

1. It is local government's responsibility to establish actual priority boundaries and acceptable densities for sewering.

2. As stated in response Number 1, EPA feels that establishment of density thresholds for sewering is the responsibility of local government (Spokane County). The economic feasibility of sewering specific areas under the CWMP will be determined in the course of establishing ULID's to pay for collection systems.

United States Department of the Interior
OFFICE OF THE SECRETARY
PACIFIC NORTHWEST REGION
500 N.E. Multnomah Street, Suite 1692, Portland, Oregon 97232

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APR 6 1981
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April 2, 1981

ER 81/227

Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

The Department of the Interior has reviewed the draft environmental statement for Spokane County Comprehensive Wastewater Management Plan, Washington and offer the following comments.

General

1 Although the Spokane River is a tributary to Franklin D. Roosevelt Reservoir, and the river is to be the recipient of additional wastewater, there is no discussion of the impacts upon water quality, recreation, and fisheries in this reservoir. This information would appear to be necessary since the Spokane arm of Franklin D. Roosevelt Reservoir has already experienced harmful algae blooms as a result of sewerage overflows into the Spokane River.

The statement fails to address impacts downstream from the study area in anything more than very general and superficial terms. While we recognize the necessity of focusing attention on the Spokane area, the magnitude of downstream impacts with No Action or under Alternatives A through E fully warrants detailed and comprehensive discussion in the statement.

As a key part of Coulee Dam National Recreation Area, the Spokane River Arm provides water-oriented recreational opportunities for over 200,000 people annually. Water quality is thus a critical factor in the continued public use of the river. We do not agree that discouraging "water-contact recreation below outfalls," as stated in Tables 2-40 through 2-42, realistically mitigates the impacts listed .

2 Very little information has been presented concerning the impacts upon wildlife caused by alternatives C-F. It is obvious that the use of 735 acres of open land could have some impacts, possibly significant ones.

3 The comparative analysis of the alternative (page 177, Table 2-39) would be more useful and effective if they could be presented side by side, rather than on separate pages. Again, the wildlife impacts of destroying 735 acres of open land is not presented.

Thank you for the opportunity to review and comment on this document.

Sincerely,

Charles S. Polityka

Charles S. Polityka
Regional Environmental Officer

Response to Comments From the U. S. Department of Interior, Office of the Secretary

1. EPA agrees that the Franklin D. Roosevelt Reservoir is a valuable recreational resource and that implementation of the CWMP will cause additional water pollutants to enter the reservoir.

However, as a condition of granting additional federal funds to the CWMP, EPA and DOE are requiring a detailed monitoring program in the Spokane River and Long Lake in order to establish the level of influence the Spokane discharge will exert on the river system. As additional data are collected, impacts below Long Lake can be better defined.

2. Alternatives C through F are no longer being actively considered by Spokane County. Therefore, the 735 acres of open land downstream from Nine Mile Falls Dam will not be affected by the project.

3. Comment noted.

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS
COMMANDER (dpl)
THIRTEENTH COAST GUARD DISTRICT
915 SECOND AVE
SEATTLE WASH 98174
PHONE 206 442-7523

16476
DPL81-119

FEB 23 1981

Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

We have reviewed your draft Environmental Impact Statement for the Spokane County Comprehensive Wastewater Management Plan, dated February 1981. Our review and comments are in keeping with parts 1508.15, 1508.26 and 1503.2 of the Council on Environmental Quality Regulations for implementing the National Environmental Policy Act (40 CFR 1500-1508).

Pursuant to the Council on Environmental Quality Regulations we have no comment on your environmental statement. Thank you for providing us with the opportunity to review this document.

Sincerely,

Richard F. Malm

RICHARD F. MALM
Captain, U.S. Coast Guard
Chief of Staff
13th Coast Guard District

Copy: Commandant (G-WS-1), U. S. Coast Guard

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FEB 26 1981
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SPEED LIMIT 55

JOHN SPELLMAN
Governor

RICHARD T. SCHROCK
Director

STATE OF WASHINGTON
COMMERCE & ECONOMIC DEVELOPMENT
General Administration Building • Olympia, Washington 98504 • (206) 753-5630 • (SCAN) 234-5630

Spokane Office - Room 307 Great Western Building
Spokane, WA 99201 (509) 456-3152

May 13, 1981

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MAY. 15 1981
ENVIRONMENTAL EVALUATION
BRANCH

Ms. Kathryn Davidson
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Ms. Davidson:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Spokane County Comprehensive Wastewater Management Plan. Our remarks are restricted to the economic impacts of the plan.

1 In general, we are in support of the Comprehensive Wastewater Plan for Spokane County given the attractiveness of Spokane's living environment and the adverse impact on economic development should water quality fail to be maintained. However, equally significant is the impediment to economic growth from lack of sewered industrial sites. We are concerned that the plan does not include an alternative which would provide wastewater treatment to existing industrial sites in Phase I.

Spokane County has been experiencing an upward trend in the number of persons unemployed. As of March, the unemployment rate was 9.5 percent versus a national rate of 7.7 percent. Simultaneously, the percentage of the labor force involved in manufacturing has been decreasing, currently 11.4 percent compared with the historic rate of 14 percent. This point was further illustrated by the location quotient analysis in the draft environmental statement which stated "that neither of the two sectors traditionally assumed to be export industries--mining and manufacturing--plays this role in Spokane County".

2 The expansion of Hewlett-Packard's operations will increase the demand for wastewater treatment as well as substantially increase employment opportunities for the area. Their demand is projected to be 415,000 gpd of capacity by 1996, surpassing

2 the capabilities of the Liberty Lake Sewer District. Employment projections forecast over 1,000 persons will be employed by 1996. According to the Comprehensive Wastewater Plan, an interceptor line will not be extended to Liberty Lake until Phase II or the year 2002. Any delay in Hewlett-Packard's expansion plans will cost the community new jobs.

Under the current economic conditions and the ever-increasing competition from other areas for economic development, it is essential that a higher priority be given to extending sewer services to industrial sites in a more timely fashion.

Sincerely,

Kathryn E. Snyder

Kathryn E. Snyder
Industrial Promotion Analyst

KES:pm

Response to Comments From the Washington Commerce and Economic Development

1. The principal concern of the CWMP is groundwater pollution caused by the multitude of residential on-site waste disposal systems being used over the aquifer. The CWMP predicts that 1.34 MGD per day of industrial waste flows will be picked up in Phase I of the project in addition to residential sewering.

2. Federal funds allocated to local jurisdictions under the Clean Water Act are intended to remedy existing water quality problems, not to promote residential or industrial growth.

JOHN SPELLMAN
Governor

DONALD W. MOOS
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 753-2800

June 2, 1981

Ms. Kathryn Davidson
Region X, M.S. 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

The Washington Department of Ecology (WDOE) has completed its review of the draft environmental impact statement (EIS) for the Spokane County Comprehensive Wastewater Management Plan (CWMP). The following are our comments on the EIS. Representatives of the WDOE have discussed some of these comments with your consultant, Jones and Stokes Associates, Inc.

1 The water quality and fisheries impacts of the considered alternatives, including those additional alternatives which were studied after publication of the draft EIS, should be discussed in greater detail. Most importantly, the EIS should include estimates of the concentrations of phosphorus, ammonia, chlorine, heavy metals and dissolved oxygen which may be present in the Spokane River as a result of implementing any of the alternatives. The WDOE prefers that the once in ten year, low flow for each month be used as the condition under which the EIS should address potential impacts to aquatic life, public health and aesthetics.

2 The Spokane River must meet Washington State water quality standards established for Class A waters (WAC 173-201-045(2)). Long Lake water quality must attain Lake Class water quality (WAC 173-201-045(5)).

3 As stated in WAC 173-201-035(12), deleterious concentrations of toxic substances shall be determined in accordance with the Environmental Protection Agency (EPA) "Quality Criteria for Water." Therefore, the target standards to be achieved include 0.017 mg/l unionized ammonia as nitrogen and 0.002 mg/l total residual chlorine.

4 Please reference the enclosed April 24, 1981 letter to Bob Wubbena for a more complete listing of the chemical parameters and the corresponding standards which are of concern to the WDOE.

5 Calculations by WDOE water quality personnel show that Alternative A will violate water quality standards for chlorine every month using the once in ten years low monthly flows. The criteria for unionized ammonia may be exceeded during the low flow period of July to October with the

addition of treated sewage from Spokane County. The biological oxygen demand of the Spokane treatment plant effluent under Alternative A may also cause difficulty in attaining the 8 mg/l dissolved oxygen standard for the Spokane River. The total oxygen demand in the river at Riverside State Park during summer low flows may be as high as 11 mg/l.

6 Phase I of the Spokane River Wasteload Allocation Study completed by URS Company for the WDOE should be referred to for determining the possible water quality impacts of the various wastewater treatment alternatives.

7 The WDOE is updating the allocation study to include all currently available information prior to establishing a recommended maximum phosphorus loading to Long Lake. The recommendation will be made to EPA, Region X by June 5. Estimates of the phosphorus loadings due to each alternative should be included in the EIS with comments on the relative likelihood of nuisance algae blooms.

8 The final EIS should be expanded to include impact analyses and proper mitigation measures for the additional alternatives proposed in the Comprehensive Wastewater Management Plan Supplemental Studies.

9 Monthly user fees are listed in Table 2-41 for each alternative. These fees represent the costs to a county user for the construction, operation and maintenance of the "Phase I" improvements. They do not include the additional costs for a local collection system nor the individual house side sewer construction cost. The final CWMP will include a range of estimates for monthly user fees. The final EIS should also be revised to include these estimates and discuss the financial impacts.

10 The figures which display possible Spokane Valley interceptor routes indicate that at least one major sewer will cross the Spokane River. This crossing will be within the area where the river and aquifer exchange water. The possible construction and operational impacts should be discussed.

11 The EIS does not contain a summary of the projected sewage flows to the City of Spokane sewage treatment plant from city and county sources. At a minimum, a table similar to Table 1-1 should be included which would display the projected 10 and 20 year design flows.

12 The WDOE commented to Spokane County on the CWMP in a March 18, 1981 letter addressed to Mr. Dobratz, County Utilities Director. A copy of that letter has been previously sent to EPA, Region X and Jones and Stokes Associates, Inc. Changes in the CWMP in response to those comments should be reflected in the final EIS.

Thank you for the opportunity to comment on this EIS. We look forward to working with your agency in bringing this planning project to a successful conclusion.

Sincerely,

Donald W. Moos
Director

DWM:me

Enclosure

cc: Glen Fiedler, WDOE, Water Programs
John Arnquist, WDOE, Eastern Regional Office
William Dobratz, Spokane Co. Utilities Director
Bob Wubbena, Economic and Engineerings Services, Inc.
Grant file, Gordon Douglass

JOHN SPELLMAN
Governor

XJ1

DONALD W. MOOS
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 753-2800

April 24, 1981

Mr. Bob Wubbena
Economic and Engineering Services, Inc.
P.O. Box 976
Olympia, Washington 98507

Dear Mr. Wubbena:

Comprehensive Wastewater Management Plan

As outlined in the Comprehensive Wastewater Management Plan (CWMP) and Wasteload Allocation Study (WAS) schedule, the Washington Department of Ecology (WDOE) was to provide guidance concerning the water quality parameters and conditions which apply to the Spokane River and Long Lake. You have been informally provided with water quality standards to assume and with background information as developed by URS Company for the WDOE. This letter serves as the formal correspondence from the WDOE.

The CWMP must address the capability of any proposed alternative to meet Water Quality Standards for the Spokane River and Long Lake. The specific parameters which must be addressed and the corresponding standard for each are:

1. Spokane River:

   A. Phosphorus: The URS Company study has identified 206 lbs/day of phosphorus as P as the allowable load from the city STP to achieve ten micrograms per liter of chlorophyll a in Long Lake. The study has also provided the daily phosphorus loading to the lake assuming an 8, 12, and 14 microgram per liter standard. Please contact John Bernhardt of the department to determine the city STP allocation of these total loadings.

   B. Un-ionized Ammonia: 0.017 mg/l un-ionized ammonia as nitrogen, as given in the United States Environmental Protection Agency's (USEPA) Quality Criteria for Water (Red Book), 1976, is to be used as the applicable standard. This number will be a design target. An analysis of the downstream river quality, as a result of implementing any alternative, must show that the target will at least approsimately be achieved.

C. Total Residual Chlorine: 0.0020 mg/l total residual chlorine, as given in the USEPA Red Book, is the applicable standard. Comments given above under un-ionized ammonia also apply here.

D. Dissolved Oxygen: The Standard for Class A waters of 8.0 mg/l is applicable up to the upstream end of Long Lake. Please provide an analysis which predicts the dissolved oxygen concentration in the river for present, 1992 and 2002 conditions, for various proposed alternatives.

E. Metals: We find it very difficult to properly address allowable metals concentrations given the time frame in which we are operating. Additional water quality studies should be done on the Spokane River before accepting the USEPA redbook criteria for metals. Such studies would take one year at a minimum. In the spirit of attempting to bring the CWMP to conclusion by September 1981, we strongly recommend that you consider the viability of an industrial wastewater pretreatment program as the answer to a metals problem and in design for additional metals removal at the municipal STP. However, we must caution you that additional removal of metals may prove to be an issue at a future date.

2. Long Lake:

Please address items I. (a)-(c), and (e).

In the analysis of the water quality impacts of alternatives, please use the ten year average monthly low flow condition for each month as the baseline river flow. One way to determine this flow is to use the flow data at Long Lake Dam. Subtract from that data the mean monthly flow for the Little Spokane River, as given in the Wasteload Allocation Study Report, and subtract the historic City of Spokane STP flow. Also, for purposes of determining compliance, assume complete mixing of the STP effluent and the river downstream of the discharge point. Finally, to determine downstream concentrations, please utilize the background Spokane River parameter concentrations and city STP effluent concentrations, which are indicated in the URS Company supplemental study, as revised by John Bernhardt in discussions with yourself.

If you have any questions please call me at (206) 753-2909.

Sincerely,

Edward J. O'Brien
Facility Planning & Design Section
Municipal Division

EJO:ss

cc: Bill Dobratz, Director, Spokane County Utilities
Bruce Collins, Collins & Ryder Consulting Engineers
Robert Burd, Water Division Director USEPA
Grant File

Response to Comments from the Washington Department of Ecology

1. See Tables 2-7 to 2-19 and accompanying discussion in the revised water quality impacts analysis, Chapter 2.

2. See Table 2-2 and accompanying discussion in the revised water quality impact analysis, Chapter 2.

3. See Table 2-2 and accompanying discussion in the revised water quality impact analysis, Chapter 2. As stated in WAC 173-201-035(12) deleterious concentrations of toxic substances shall be determined in accordance with "Quality Criteria for Water" and/or other relevant information. In view of subsequent publications (Ward and DeGraeve 1978 and Thurston et al. 1979) EPA feels that a criterion of 3 μg/l for chlorine is more appropriate.

4. These parameters were taken into account in the revised water quality impact analysis contained in Chapter 2.

5. See Tables 2-16 to 2-18 and accompanying discussion in the revised water quality impact analysis, Chapter 2.

6. The DOE waste allocation study was used to assess the effects of additional phosphorus loading to Long Lake due to each alternative (see water quality section of Chapter 2).

7. See sections on the effects of additional phosphorus loading in the revised water quality impact analysis, Chapter 2.

8. Brief discussions of impacts associated with the recently proposed Alternative A suboptions are contained in Chapter 1.

9. Table 2-22 in Chapter 2 presents a summary of all user cost estimates developed to date by the project engineers. The financial implications of these costs are briefly addressed in the accompanying text.

10. A detailed description of construction technique for the river pipeline crossing has not been prepared by the project engineers. Conversations with the engineers indicate that double jacket piping can be used for the section crossing the river and cut-off valves can be installed in the pipe on both sides of the river to reduce the chance of a significant sewage spill into the river. Use of these protective measures could be made a condition of DOE grants to Spokane County for interceptor construction.

Construction of a pipeline across the river at Palisade Park could lead to temporary turbidity problems both in the river and in the aquifer, as the river recharges the aquifer in this area. Any modification of the streambed or streambank should be conducted in a manner that would minimize turbidity and subsequent soil erosion.

Once the pipe is in place, it could create a serious health threat if it leaked or was ruptured. City water supply wells tap the aquifer a short distance downstream from the proposed crossing. To minimize the risk of contaminating surface or groundwater supplies, the pipeline should be constructed with the extra jacketing and valving mentioned above.

11. Table 4-1 is attached to present the requested information.

12. Facilities plan changes received prior to June 15, 1981, have been incorporated into the text of this Final EIS.

Table 4-1. Projected Wastewater Flows for Phases I and II (in MGD)

	Phase I 1992		Phase II 2002	
Planning Area	ADWF	PWWF	ADWF	PWWF
North Spokane[1]	3.6	5.4	4.7	7.0
Indian Trails[1]	0.74	1.1	1.23	1.86
Spokane Valley and Moran Prairie[1]	9.0	13.5	15.5	23.25
Liberty Lake and Newman Lake[1]	*	*	3.5	5.25
West Plains[1]	**	**	2.6	3.9
City of Spokane[2]	33.28	53	34.66	56
TOTAL	46.62	73	62.19	97.26

*Tributary to the Liberty Lake plant in Phase I.

**Not to be sewered until Phase II.

[1] SOURCE: U. S. Environmental Protection Agency 1981, Table 1-1.

[2] SOURCE: Economic and Engineering Services, Inc. 1980a, Table II-7.

JOHN SPELLMAN
Governor

FRANK LOCKARD
Director

STATE OF WASHINGTON
DEPARTMENT OF GAME
600 North Capitol Way, GJ-11 • Olympia, Washington 98504 • (206) 753-5700

May 28, 1981

RECEIVED
MAY 29 1981
ENVIRONMENTAL EVALUATION
BRANCH

Kathryn M. Davidson
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

DRAFT ENVIRONMENTAL IMPACT STATEMENT:
Spokane County Comprehensive Wastewater Management Plan

Dear Ms. Davidson:

Your document has been reviewed by our staff as requested; comments follow.

1 In general, we concur with comments submitted in the April 17, 1981 letter from Michael A. Kennedy Consulting Engineers to the Liberty Lake Sewer District commissioners regarding the wastewater management plan. Our main concerns center on potential impacts to fish egg and fry production and the aquatic food chain from chlorine discharge to the Spokane River.

One problem with the assessment of impacts to the aquatic environment is the use of average river flows to determine water quality impacts. A time-weighed average, a median, or a typical summer flow should be used to determine impacts of nutrients and chronic effects of toxicants on aquatic life. Because of the use of average flows, this EIS does not adequately depict potential impacts to vegetation, wildlife, and recreation.

2 We question whether the comprehensive wastewater management equalization basins will be sufficient to handle increased flows before storm sewer separation is completed.

Specific comments follow.

3 Page 56, Mitigation Measures. This section states, "If determined that metal or toxin concentrations are reducing fish productivity below acceptable levels, effluent should be disposed of on land sites or additional treatment should be required" and "If determined that phosphorus or nitrogen loading is in excess of maximum permissible levels, then effluent should be disposed of on land

3 sites or additional treatment should be required." These are listed in the EIS as possible mitigative measures. We suggest that this statement be strengthened so that there is assurance these measures will be employed. It is likely that at certain times and during certain flows, toxic substances are already reducing fish productivity and impacting recreation. This would also be true for chlorine and ammonia as well.

4 Page 62, Toxic Substances and Aesthetics. The Spokane River is classified as Class A water. The Washington Department of Ecology must ensure that water quality standards are maintained downstream from the City of Spokane. The proposed discharge would likely not meet these standards for unionized ammonia, chlorine residual, and effluent dilution during low flow periods. Low flow periods are critical times for fish and wildlife.

5 Page 72, Heavy Metal Increases. Again, the assessment of water quality impacts should consider heavy metal concentrations during low flow periods.

Organisms may show threshold responses to increases in toxic substances. Even an increase of .001 mg/l should be considered significant.

6 Page 75, paragraph 1. Increases in unionized ammonia and chlorine residual will likely compound heavy metal toxicity problems. This would result in higher egg and fry mortality and further result in lower fish productivity.

7 Page 75, paragraph 2. This section states fish would avoid areas immediately downstream of the outfall site. Other studies indicate that certain toxins, including ammonia, seem to attract fish. It should be noted these downstream areas offer some of the best physical fish habitats.

8 Pages 76-78. This section should include a discussion of the interrelationships in the aquatic food web. What impacts will changes in disolved oxygen (DO) have on aquatic organisms which serve as food for fish? Decreases in DO may increase the uptake of heavy metals by aquatic organisms.

9 Page 142, paragraph 2. There should be planning efforts to ensure that areas outside of the priority sewer service area maintain population levels compatible with water quality goals.

10 Page 154. Small game and non-game wildlife are also threatened by development. It should be noted that when wildlife habitat is destroyed or altered, wildlife populations will be reduced or lost.

11 Page 180, Table 2-41. Under the section of "Spokane River Fishery," adult fish and fish productivity would also be affected.

Thank you for the opportunity to review this document. We hope you find our comments helpful.

Sincerely,

THE DEPARTMENT OF GAME

Mark H. Grandstaff

Mark H. Grandstaff, Applied Ecologist
Environmental Affairs Program
Habitat Management Division

MHG:cv
cc: Agencies
Region

Response to Comments from the Washington Department of Game

1. Water quality impacts have been assessed at three different flow regimes in the revised water quality impact analysis (Chapter 2): median flow of the critical summer month, Q_{7-10} flow and 15 percent of the Q_{7-10} flow which represents the dilution zone of the wastewater discharge.

2. During design review of the CWMP, DOE must ensure that the planned equalization basins are sized sufficiently so that the existing City of Spokane combined sewer overflow (CSO) problem is not increased by county wastewater flows. The county's CWMP indicates adequate capacity will be provided.

3. The Preface to this report lists an EPA grant condition regarding water quality impacts and a required water quality monitoring program. A monitoring program will be established if Alternative A is implemented according to Volume II of the CWMP. This program would provide more definitive data on the waste discharge impacts to the Spokane River fishery. If the monitoring indicates that a significant adverse impact is being created by the discharge, one of the appropriate Alternative A suboptions must be implemented to mitigate the impact. For more information on the proposed water quality monitoring, refer to the water quality section of Chapter 2.

4. Refer to Tables 2-2, 2-7 to 2-13, 2-16 to 2-18, and the accompanying discussion in the revised water quality impact analysis, Chapter 2.

5. Refer to Tables 2-7 to 2-15, 2-19, and the accompanying discussion in the revised water quality impact analysis, Chapter 2.

6. Little useful data are available on the synergistic effects of pollutants on aquatic organisms. Some data indicate that synergistic effects on organisms are not only species specific, but also vary with the ratios and absolute concentrations of the pollutants and the life stage of the species. Therefore, speculation on synergistic effects has not been included in the water quality impacts discussion.

7. The statement concerning avoidance of ammonia by fish was omitted in the revised water quality impact analysis.

8. EPA recognizes that benthic invertebrates comprise a large percentage of the diet of resident fish species. However, in comparison to fish, very little data exist on the acute and chronic toxicity values for benthic organisms. The data suggest, however, that these organisms can tolerate higher concentrations of heavy metals and toxic compounds than fish. Thus, the EPA maximum and 24-hour average values

should protect invertebrates as well as fish. Consequently, we feel that a separate assessment of impacts to invertebrates is unnecessary.

9. EPA agrees with this statement, and strongly supports the county 208 plan recommendations in this regard.

10. Comment noted.

11. EPA agrees that adult fish would also be affected by dissolved oxygen decreases in Long Lake.

STATE OF WASHINGTON
Department of
Natural Resources

COMMISSIONER
BERT L. COLE

R. A. BESWICK
SUPERVISOR

Box 190
Colville, WA 99114

March 9, 1981

Environmental Protection Agency
1200 - 6th Ave.
Seattle, Wa 98101

Attn: Kathryn Davidson - M/S 443

Dear Ms. Davidson:

RE: Spokane Comprehensive Waste Water Management Plan

I have reviewed the Environmental Impact Statement for the above mentioned project and have no additions to make to the checklist itself. I do have the following comments to make to the proponent.

1 1. An approved forest practice application shall be required prior to any development on any of the forest land within the boundaries of the project.

2 2. The proponent should address the question of forest slash abatement which should be accomplished during the clearing operation as covered under RCW 76.04.310. The proponent should have a slash predisposal plan approved by the Department of Natural Resources prior to any development.

3 3. A surface land mine reclamation permit and reclamation plan shall be required if more than two acres of contiguous land is to be disturbed or more than 10,000 yards of mineral is removed in any type mining operation. (For example, the removal of top soil or any other aggregate type of material to be sold or used for construction off the proposed development site.)

Sincerely

Walt Wruble

Walt Wruble
Spokane Unit Local Manager
WW:bl

cc: Philip Hildebrand, Area Manager
Ross Hesseltine, Arcadia District Manager

RECEIVE
MAR 11 1981
[illegible]

AN EQUAL OPPORTUNITY EMPLOYER

Response to Comments from the Washington Department of Natural Resources

1. Comment noted. The county's preferred alternative does not directly involve development of forest land.

2. The county's preferred alternative, as described in the CWMP, does not include significant land clearing for new facilities. If clearing does become necessary the county must comply with RCW 76.04.310.

3. Comment noted. The county should apply for a surface land mine reclamation permit prior to constructing its planned equalization basins.

JOHN SPELLMAN
Governor

JACOB THOMAS
Director

STATE OF WASHINGTON
OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
111 West Twenty-First Avenue, KL-11 • Olympia, Washington 98504 • (206) 753-4011

RECEIVED
APR 9 1981
ENVIRONMENTAL EVALUATION BRANCH

April 8, 1981

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Log Reference: 130-F-EPA-02

Re: Spokane Comprehensive Wastewater Management Plan

Dear Ms. Davidson:

A staff review has been completed of your draft environmental impact statement. The project was reviewed previously by this office with reference to 130-F-EPA-02. We note your commitment to identify, preserve, and protect cultural resources which are known or anticipated to be present in the project area and to consult with the State Historic Preservation Officer regarding the presence of cultural resources and the potential effects of the project on the cultural environment.

Thank you for your consideration of our cultural heritage.

Sincerely,

Sheila A. Stump
Archaeologist

db

STATE OF
WASHINGTON
John Spellman
~~Dixy Lee Ray~~
Governor

WASHINGTON STATE PARKS AND RECREATION COMMISSION
7150 Cleanwater Lane, Olympia, Washington 98504 M.S. KY-11 206/753-5755

February 17, 1981

35-2650-1820
DEIS - Spokane County
Comprehensive Wastewater
Management Plan
(E-2133)

Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Ms. Davidson:

The staff of the Washington State Parks and Recreation Commission has reviewed the above-noted document and does not wish to make any comment.

Thank you for the opportunity to review and comment.

Sincerely,

David W. Heiser, E.P., Chief
Environmental Coordination

DWH/PJP:sh

RECEIVED
FEB 18 1981
ENVIRONMENTAL EVALUATION
BRANCH

League of Women Voters of the Spokane Area

NORTH 2319 MONROE
SPOKANE, WASHINGTON 99205

(509) 327-8166

The League of Women Voters wishes to commend the different agencies on their prompt action in developing the 201 Wastewater Management Plan.

However, even though we view aquifer protection as a high priority, we feel we must bring up two other concerns.

1 The first is the lack of any regional solution to this problem between Idaho and Washington. Neither state can protect this valuable resource alone and we urge a two state agreement before a sewer plan of this magnitude is approved.

2 The second concern is the sprawl projected over the aquifer in the Generalized Comprehensive Plan. As the Land Use Plan has no mechanism to contain development to fill in areas -- possibly the Wastewater Management Plan should contain ways to accomplish containing sprawl. We base this feeling on the time lap already experienced in the North Spokane Sewer Plan.

Again we commend you and hope you will improve the plan by using our two suggestions.

5/4/81
Julia Coelho
Chairman,
Natural Resources

Response to Comments from the League of Women Voters of the Spokane Area

1. EPA supports the need for a bistate effort to manage water quality problems in the Spokane River drainage. Although there is currently no bistate agreement, EPA is coordinating water quality management efforts in both states through its 208 and 201 programs.

2. The CWMP is not being prepared as a land use planning or growth control mechanism. It is intended to provide wastewater service to the pattern of development being planned by the local jurisdiction.

Liberty Lake Sewer District

RECEIVED
APR 27 1981
ENVIRONMENTAL EVALUATION BRANCH

April 22, 1981

Ms. Kathryn Davidson, M/S 443
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Re: DRAFT EIS for Spokane County Comprehensive Wastewater Management Plan (CWMP-EIS)

Dear Ms. Davidson:

Thank you very much for the opportunity to review the CWMP/EIS. We have a special interest in this particular document because of our involvement in wastewater management within the planning area but moreover because of our concern for maintaining a quality environment in Spokane County.

Our general and specific concerns with the DRAFT EIS are contained in the attached review provided by our technical consultants. Basically, our review and comment can be summarized as follows (please refer to the attached information for substantiation):

1

1. The methods of water quality and fisheries impact assessment in the DRAFT EIS are not sufficiently comprehensive nor is the approach adequately conservative to give a good estimate of the impacts of the Plan Alternates.

2. The Recommended Alternate protects the aquifer but would probably result in unacceptable water quality in the Spokane River downstream of the Regional WWTF discharge point.

3. We feel that the adverse impacts of the relatively small upstream LLSD discharge are accentuated. It should be made clearer in the EIS what the relative magnitude of impacts will be from the Regional WWTF and the LLSD WWTF.

4. We feel that to a large extent the present water quality in the Spokane River, particularly downstream of the City of Spokane, is undesireable. The EIS should better describe and evaluate present water quality in the River.

5. We feel that the EIS does not exhaust the reasonable possibilities for regional wastewater management and disposal, especially with regard to land application and seasonal river discharge.

LIBERTY LAKE WASHINGTON 99019

6. LLSD has no problem with connecting into the proposed Spokane Valley interceptor in 2002. However, we would oppose connecting into that interceptor in 1992. At present, the only effective mechanism available for protecting Liberty Lake from water quality degradation due to surface runoff is the sewer hookup authority. We feel, in addition, that the CWMP implementation schedule may be extremely optimistic, as it seems unlikely that a Valley interceptor will be completed by 1992.

Thank you again for this opportunity to review and comment. We will look forward to reading the final EIS and attending the public hearing on this project.

Sincerely,

LIBERTY LAKE SEWER DISTRICT

Arthur H. Toreson, Secretary

AHR:jh
cc: Bob Burd, EPa
Cecil Carroll, EPA
John Arnquist, DOE
Claude Sappington, DOE
Gordon Douglass, DOE
Ray Duff, DOG
Spokane County Commissioners
Director, Spokane County Health District
Terry Novak, Spokane City Manager
Director, City Public Utilities Department
Manager, City Engineering Department
Lake Spokane Environmental Association
League of Women Voters
Ray Soltero

MICHAEL A. KENNEDY CONSULTING ENGINEERS

Michael A. Kennedy, P.E.
David R. Welker, P.E.
John W. Gundlach, P.E.
Ralph R. Walker, P.E.

April 17, 1981

Liberty Lake Sewer District Commissioners
South 1827 Liberty Drive
Liberty Lake, Washington 99019

Dear Commissioners:

Enclosed is our review of the DRAFT EIS for the Spokane County Comprehensive Wastewater Management Plan (CWMP-EIS) as you requested. The review consists of two sections. The General Comment section gives our overall appraisal on a number of points. The Specific Comment section gives a detailed, itemized review of the EIS.

As you may be aware, the public hearing for the CWMP-EIS has been delayed. It is currently scheduled to take place May 14, 1981, at 7:30 P.M. at the Spokane County Health Building.

If you have any questions concerning this review, please contact me.

Sincerely,

MICHAEL A. KENNEDY CONSULTING ENGINEERS

Philip L. Kaufmann

Philip Kaufmann
Environmental Specialist

PRK:jh
Enclosure

W. 1720 - 4th Ave SPOKANE, WA 99204 (509) 838-6466

REVIEW OF CWMP DRAFT EIS

A. GENERAL COMMENTS

2 1. The EIS does not adequately describe and evaluate the present water quality of the Spokane River downstream of the Spokane WWTF discharge. Except in the case of Long Lake, we realize that much of this information is not presented systematically in any available publications. A brief review of water quality at Riverside State Park suggests, however, that the chemical and biological condition of the River is not meeting Class A Stream Quality Standards. This situation is undesirable in view of the fact that the River passes through a very important State Park and recreation area and also flows into Long Lake, a reservoir already plagued with algal problems.

3 2. The EIS water quality and fishery impact assessment procedures are generally unconservative. Water quality changes are computed primarily as averages. The mean river flow is used. A time-weighed average, a median, or a typical summer flow would more accurately depict "average" conditions. Typical flows during the summer and fall are near 1000 c.f.s. The effects of nutrients and the chronic effects of toxicants would be better assessed using these lower flows rather than the mean flow which is biased by high flood flows during snow melt. The acute adverse effects of toxicants should be assessed using the Q_7-10 flow and also the lowest-ever-recorded flows. Acute and chronic effects on relatively non-mobile organisms such as stream insects should be assessed as well in the zone of dilution during typical low flows and the Q_7-10 flow.

4 3. Because of the items mentioned in "2" above, the EIS does not contain the water quality information necessary to predict floral, faunal and recreational impacts resulting from the proposed effluent discharge. Preliminary calculations in our office show that effluent dilution, total and inionized ammonia, chlorine residual, algal nutrients and certain toxicant concentrations would not be in compliance with water quality standards in the River downstream of the Spokane Regional WWTF. Although errata subsequent to the Draft EIS publishing date suggest that un-ionized ammonia and chlorine residual may exceed safe levels during the Q_7-10, we feel that both the frequency and the severity of these problems are of greater magnitudes than suggested. (see attached Tables A, B and C)

5 4. In many places, the EIS contrasts the predicted water quality impacts of the LLSD WWTF and the proposed CWMP WWTF. Some basic information about the relative magnitude of the two facilities and the dilution ratio of effluent to river water will give perspective to these discussions. The LLSD discharge will have flows of 1 to 3 MGD with effluent dilution ratios of 1/130 to 1/44 at the adjudicated low flow of 200 cfs. On the other hand, the proposed regional WWTF (Alt A) will have design flows of 44 to 66 MGD with critical low flow (Q7-10) dilution ratios of 1/9.2 to 1/6.5. A comparison of the water quality assessments in the LLSD Facilities Plan Addendum and the CWMP Draft EIS is shown in attached Table D.

It should be pointed out that not only will the LLSD treatment facility discharge be a small fraction with greater, dilution than the proposed regional discharge; but in addition, the LLSD effluent can be expected to be more consistent and of higher quality. Reasons for this difference are the following circumstances and design features:

a) The LLSD plant will employ chlorine removal to prevent chlorine residuals from reaching harmful levels in the River (including the zone of dilution during the Q7-10 flow).

b) The influent flow to the LLSD plant will be equalized so that consistent, optimum treatment should be achieved.

c) Because of "a" and "b" above, disinfection of the LLSD effluent will be very effective.

d) LLSD has adopted very strict industrial waste pre-treatment ordinances which should allow proper WWTF performance and high quality effluent.

e) Recent negotiations involving Washington Water Power, LLSD, DOE and the State Dept. of Game resulted in the establishment of a required minimum flow of 300 c.f.s. through Post Falls Dam. This flow should guarantee at least 200 c.f.s. in the River near Harvard Road Bridge. Therefore, impacts will be somewhat less than those predicted in the 1978 Environmental Impact Assessment, which discussed water quality changes during a Q_7-10 of 103 c.f.s.

6 5. The Land Application Alternates presented in the EIS do not exhaust the possibilities reasonably available. The costs presented also appear rather high. It is difficult to review Plan Alternative Costs because there is no breakdown of costs in the EIS or in the CWMP itself. No consideration is given to land application in the West Plains area (near Airway Hts.). Also, no consideration is given to any schemes employing land application during

6 the summer low river-flow periods and river discharge during the high flow season. Similarly, no consideration is given to the possibility of using the wastewater for beneficial use; for example, in some modification of the Latenzer proposal.

7 6. Generally, we feel that the CWMP implementation schedule may be too optimistic. It is difficult to imagine that the processes of ULID formation, bond issue approval, easement procurement and construction for the two successive phases will occur by 1992 and 2002, respectively. We also have concern that the CWMP equalization basins may not be sufficient to allow the Spokane WWTF to handle increased flows before the Storm Sewer Separation is completed.

B. SPECIFIC COMMENTS

8 pg 11 Table 1 (also pg 122 Para. 1,2; pg 123, Table 2-20; pg 124, Table 2-21; possibly pg 125, Table 2-22

There is an error in adding annual O & M costs for Alternate A on page 124, Table 2-21 which affects the other pages listed above. Annual O & M for Alt. A in the table adds up to $1,462,400 per year, not $1,198,500 per year. This brings Alternate A from the second lowest to the fourth lowest alternate ranked according to annual O & M costs. Present worth and user charge computations for Alternate A should be re-checked to insure that they are not in error.

9 pg 16 Para. 2

The existing LLSD wastewater treatment facility, as of 1/1/81, services 739, vice 75, lots. The new 1MGD facility is under construction presently and will employ secondary treatment with chlorine removal. Phosphorus removal will be added if the facility is expanded.

10 pg 42 Para. 2

Please provide a reference for the proposed draft EPA criteria for zinc, copper, mercury, and cadmium. The recommended Maximum Contaminant Levels (MCL's) cited in this paragraph differ from those in EPA (1976), "Quality Criteria for Water."

11 pg 43-54

The entire section entitled "Influence on Spokane River Water Quality" cannot be properly reviewed as it is not known whether the phosphorus concentrations discussed are in terms of mg/l P or mg/l PO4----the difference is 3-fold. Please correct this problem and give us another opportunity to review the information.

12 pg 46

Expected concentrations as well as loadings of total and ortho-phosphorus must be tabulated before and after plan implementation in order to adequately ascertain the impact of the proposal on both free-flowing and impounded stretches of the Spokane River. It is the form and concentration of phosphorus which determines its availability to algae. This comment is not intended to slight the importance of knowing the nutrient loadings for assessing the impact on impounded stretches such as Long Lake.

13 pg 47 Para. 4

This paragraph, entitled "Nitrogen" contains apparent contradictions. Because of the way it is stated, it is not clear whether the Spokane City WWTF significantly changes the nitrogen concentrations in the River (either total or inorganic-N).

14 pg 49

At the beginning of the sub-section entitled: "Impacts of the Proposed Alternatives on Existing Water Quality," the authors state that: "...Loading of selected water quality parameters was calculated for mean and Q7-10...river flows..." A table similar to Table 2-4 (pg 46) should be constructed showing expected loadings after the implementation of plan alternates.

15 pg 55 (Mitigation measures)

"Reaeration and dilution rates in the river should be calculated to enable better assessment of future discharges on water quality." This measure is listed as a future study which could be initiated as a mitigating measure. We feel that this work should be done as part of the EIS process.

"The source of all toxic substances in the river should be identified." This measure is listed as a future study which could be initiated as a mitigating measure. We feel that the present DOE/EPA/LLSD funded Wasteload Allocation Study should deal with this problem.

16 pg 56 (Mitigating Measures)

"If determined that metal or toxin concentrations are reducing fish productivity below acceptable levels, effluent should be disposed of on land sites or additional treatment should be required."

"If determined that phosphorus or nitrogen loading is in excess of maximum permissible levels, then effluent should be disposed of on land sites or additional treatment should be required."

16 The two measures above are listed in the EIS as possible general mitigation measures. It is probable that, in certain portions of the River at certain seasons or flows, phosphorus, nitrogen, organic loading, and toxin concentrations are already reducing fish productivity as well as other beneficial River uses. This would probably hold true for chlorine residual and un-ionized ammonia as well as other toxins.

17 pg 59 Para. 4

(Warren pers. comm.) is not listed in the Reference List.

18 pg Para. 5

There is a mathematical error in converting units: 2,372 MGD and 6,387 MGD convert to 3660 c.f.s. and 9,856 c.f.s. respectively, not 10 c.f.s. and 27 c.f.s. as written.

19 pg 60 Para. 1

Omitted from a discussion of Spokane River water withdrawal rights is a long-standing right (we are not sure of the category) owned by Inland Empire Paper Company. This right would allow that Company to divert (into an artificial channel) the entire river flow from its natural course along a stretch in the Spokane Valley for the purpose of electrical power generation.

20 pg 61 Para. 1

This paragraph is inaccurate. There exists in the Spokane Valley a long stretch of the Spokane River bordered by private land in semi-natural state (owned by Inland Empire Paper Company). The water in this river stretch is clear and swift, flowing in a fairly restricted channel with steep banks. Several parks and recreation areas are included in the Spokane Valley stretch of river. It is important from the standpoint of fisheries, aesthetics, and recreation.

21 pg 62 last Para.

Fecal coliform concentrations are predicted here using an effluent concentration of 78 MPN/100ml. It would be safer to do the assessment of public health risks using <200 MPN/100ml as an effluent fecal coliform concentration. Also, the reader loses perspective on the significance of the LLSD discharge when the EIS contrasts the expected fecal coliform increase due to the entire ultimate flow of that facility with only the increment of increase expected from the Spokane Facility.

22 pg 62 Referring to Paragraphs on "Toxic Substances" and "Aesthetics"

The Spokane River is classified by the State as a Class A water. The EIS states correctly that "...the Washington Water Quality Standard states that toxic, radioactive, or deleterious material concentrations shall be below those of public health significance, or which may cause acute or chronic toxic conditions to aquatic biota, or which may adversely affect any water use..." (underlining is ours). The remainder of the EIS, in its approach to discussing CWMP alternatives and their impacts, does not seem to accept the necessary implication of that statement--specifically, that the State Department of Ecology (by Law) cannot allow violation of the water quality standards downstream from the City of Spokane. An ultimate discharge of 66 MGD of secondary treated wastewater (with 85% phosphorus removal) will almost certainly not meet standards for unionized ammonia, chlorine residual and effluent dilution during low flow. The EIS does not present information sufficient to determine whether requirements of State water quality law will be met with respect to other constituents during low flows. The summer/fall low flow periods are not only those periods when Spokane River flora and fauna may be most susceptible to adverse impact, but are also the periods of most intense human use of the River.

23 pg 63 Para. 1

- Note that Harvard Road Park is upstream from the proposed LLSD effluent discharge location.
- On one hand the draft EIS states that the LLSD discharge of 1 to 3MGD will have an important impact on contact recreation downstream. On the other hand, the EIS states that the Spokane WWTF (36 MGD in 2002 under No-Action Alt.) should not significantly influence contact and other recreation. Besides the greater effluent dilution, reasons have already been discussed (GENERAL COMMENT NO. 4) why the Liberty Lake facility may likely discharge a higher quality effluent than the Spokane WWTF or the expanded facility under Alt. A.

24 pg 64 Second Para. under Alt. A

The increase in total ammonia shown (.06 mg/l as N) corresponds to an effluent concentration of only 9.7 mg/l Ammonia-N. The EIS shows an expected effluent total ammonia-N concentration of 14.6 mg/l in Tables 2-5 and 2-6. This effluent concentration yields a calculated concentration increase of .09 mg/l at mean River flow.

Should the reader re-calculate every number given in the EIS? How many significant errors have gone unnoticed?

25 pg 64-65

The entire section on fishery impacts of CWMP alternates ignors the probability that many toxicants will exert impacts after reaching a concentration threshold. The severity of impacts, therefore, will not necessarily be in direct linear proportion to the effluent dilution ratio. It is possible, for example, that an effluent discharge of 10 c.f.s. in a given River flow would be acceptable and 11 c.f.s. not acceptable from a fisheries standpoint. In general, the analysis of fisheries impacts contained in the EIS must be more comprehensive and must take into account River flow variation. Careful comparison with available information on acceptable environmental contaminant levels should be undertaken for every known or suspected constituent of environmental consequence in the effluent. Finally in addition to discussion in the text, the information should be displayed in a systematic tabular format (or something equivalent) so that it may be effectively reviewed by decision-makers.

26 pg 65

Is Upriver Park really considiered more important than Riverfront Park? Is this from the standpoint of water contact recreation? Also, is not the importance of Riverside State Park under-rated here?

27 pg 65 Para. 3

Toxicants as well as pathogens from the alternate Felts Field WWTF could affect the quality of well water at the City of Spokane well 1 mile downstream of that facility's discharge. This risk is accentuated because there is insufficient turbulence and distance in which the 19 MGD of discharged effluent could become diluted in the River flow. It is odd that the impact of the small upstream LLSD discharge (1 to 3 MGD) on the city wells is accentuated (pg 99) while the groundwater impacts of a possible 19 MGD WWTF discharging effluent near Felts Field seems to be treated as a rather minor impact (see pg 99).

28 pg 65 last Para

The impact of Alt. E on surface water and groundwater quality would not be the same as Alt. D as stated in the EIS. Alternate E does not entail discharging 19 MGD of effluent to the Spokane Ribver near Felts Field as does Alt. D.

29 pg 67-71

This information on water quality standards and existing water quality conditions should be tabulated as well as discussed in the text, otherwise it is very difficult to review. A section dealing with toxic organic compounds should be added to this section and to the succeeding water quality impact discussions.

30 pg 72

The EIS states reassuringly that increases in toxic heavy metal concentrations below the proposed outfall (Alt. A) will increase by less than .001 mg/l and that these increases should not impair adult fish productivity beyond present levels. This statement is only one of many separate instances in the EIS where the reader is misled first by an inadequate assessment of impacts and second by a biased presentation of those impacts. Our concern with the EIS's approach are the following:

a) The heavy metal concentration increases discussed were computed using the mean River flow. This flow statistic (7570 c.f.s. at Riverside State Park) is very much biased by early spring flood flows. Summer and fall flows are typically near 1,000 c.f.s. for extended periods of time, surprisingly independent of the magnitude of previous winter/spring flows. The EIS should assess future water quality changes based upon effluent dilution in the Q7-10 and lowest recorded flows. The impact of certain constituents should be assessed based upon calculated concentrations within the dilution zone during the Q7-10.

b) A concentration increase of less than .001 mg/l is referred to as a "trace" and is more-or-less dismissed as insignificant. Resultant river concentrations of .001 mg/l, let alone increases of .001 mg/l of many chemical species may be deleterious. For example, .001 mg/l is 2.5 times the recommended maximum contaminant level (MCL) for cadmium, 20 times the recommended MCL for mercury, and 100 to 1,000 times those recommended for many toxic organic compounds.

c) The EIS appears to ignore the fact that organisms and biological systems often show a threshold response to incremental increases in toxicant concentrations,. An increase of.001mg/l in a certain constituent may be the proverbial "straw that broke the camel's back" if River concentrations of the constituent are near, at, or above the recommended safe level (MCL).

31 pg 75 Para. 1

The EIS states that "...although adult fish productivity should not be significantly impaired below existing levels by increases [in heavy metal concentrations], the possibility of increased egg and fry mortality is conceivable....". The end result--the productivity of adult fish--is likely to be impaired as a result of impaired survival of immature stages; especially in light of the increases in un-ionized ammonia, chlorine residual and other unknown factors that will occur concomitantly and may likely aggravate heavy metal toxicity problems.

32 pg 75 Para. 2

The EIS cites U.S. EPA (1976) stating:"...Adult fish are able to detect low concentrations of these substances [residual chlorine and un-ionized ammonia at less than .001 mg/l "trace" concentration] and would simply avoid areas immediately downstream from the outfall site..." The cited reference does contain information consistent with this statement with regard to residual chlorine (pg 34 of EPA 1976 citing Sprague and Drury, 1969). However, the reference does not state or imply similar avoidance of ammonia. In fact Hynes (1974)* cites information suggesting that some toxins, including ammonia, seem to attract fish. In addition, while it may be true that fish avoid chlorine residual concentrations of .001 mg/l, they have been observed to be attracted to higher chlorine residual concentrations, presumeably due to the occurrence of breakpoint chlorination (oxidation of ammonia) at the gill surface. (we could not find the reference for this study at this time but could track it down.)

* Hynes, H.B.N. (1974) The Biology of Polluted Waters, University of Toronto Press, Toronto and Buffalo pg 77.

33 pg 75 Para. 4

The EIS states that the increase in ammonia nitrogen resulting from the proposed LLSD discharge will be in excess of 90%, qualifying the statement that the actual amount of increase (.01 mg/l) is rather small. The statement is accurate, however, it should probably be pointed out in comparison that river ammonia nitrogen concentrations increase by approximately 1600% between Harvard Road and Sullivan Road.

34 pg 75-76

The EIS states (pg 75 Para. 4) that insufficient data prevent accurate calculation of B.O.D. and ammonia deoxygenation resulting from the proposed regional discharges. These should be calculated during the EIS review--even if only to establish the "worst case" condition using conservative assumptions. Applicable literature could be used for deoxygenation rate of waste material, reaeration rate of the river, and the dilution rate in the river. Care should be taken to err on the side of conservatism, in otherwords on the side which would yield lower D.O. value in the River. (To do this, one would use lowest river flows & dilution, use warmest temperatures, not over-estimate reaeration, etc.). The statements in the first sentence on page 76 and in Para. 3 pg 78 that no significant reduction in D.O. should occur in the flowing portions of the River appear to be "gut feelings" and may amount to dangerous speculation.

35 pg 76-78

Pertinent to the discussion of impacts of planned B.O.D. discharges on the Spokane River/Long Lake fishery would be a discussion of the fish food chain and the impacts on that system. What and where do the various fish species eat? Many of the fish food organisms have only limited motility. Will their survival be impaired by possibly expanded areas of oxygen depletion? The concern holds true whether the D.O. depletion is due directly to B.O.D. discharge from the Spokane Regional WWTF or indirectly due to decomposition of an increased algal biomass resulting from additional nutrient loading. It is also possible that decreased D.O. in the Spokane River reservoirs could release (or make more available for uptake by bottom organisms) heavy metals previously precipitated and stored in bottom sediments.

36 pg 77 Para. 2

The EIS states that "...Heavy metal and toxin increases at Spokane would be in trace amounts and should produce effects similar to those mentioned for the No-Action Alternative...." In the No-Action Alternative the total wastewater discharge from the Spokane WWTF will increase from 31.5 to appproximately 36 MGD (a 4.5 MGD increase). Under Alternate A, the Spokane WWTF flow will increase from 31.5 to approximately 62 or 66 MGD (an increase of over 30 MGD). The water quality impacts certainly would not be similar with an increase of at least 7 times the magnitude. A look at the effluent dilution ratios (during the Q7-10 flow) resulting from the predictd flow increases is shown in the abbreviated table below (our calculations). This information illustrates that Alternate A is likely to be significantly more adverse in its water quality impacts than the present situation and the "No-Action" Alternative. It should be pointed out that the present situation is already undesireable from the standpoint of effluent dilution. In the present situation, effluent dilution would be approximately 1 to 20 in typical summer flows of 1000 c.f.s.

	1981 Present	2002 No Action	2002 Alt. A
WWTF Effluent Flow	31.5 MGD	36 MGD	62.2 MGD
Spokane River (Q_7-10) Flow	560 c.f.s.	560 c.f.s.	560 c.f.s.
Dilution Ratio Q_7-10	1/12	1/11	1/6.8

37 pg 77 Under the title "Alternative A":

The only discussion of dissolved oxygen changes resulting from this alternative is the removal of an adverse impact caused by the LLSD plant discharge. The impact (or the removal of the impact) of this small effluent discharge is minor in relation to the expected impact of Alternative A on dissolved oxygen concentrations in the Spokane River. An abbreviated table of predicted BOD$_5$ increases (mg/l) illustrates the relative magnitudes. It would seem that the downstream dissolved oxygen impacts of Alt. A should be discussed thoroughly.

BOD$_5$ INCREASE DUE TO EFFLUENT DISCHARGE

	Spokane River Flow		
	Mean	Q7-10[a]	15% of Q7-10[b]
Alternative A (increase only)	.13[c]	1.6[d]	7.6[d]
Present flow + Alt. A increase (66 MGD)	.28[d]	3.2[d]	12[d]
LLSD (3 MGD)	.006[e]	.3[e]	1.4[e]

FOOTNOTES:

a) Note that the Q$_7$-10 at the LLSD discharge point has been calculated to be 103 c.f.s. The BOD increases shown correspond to this flow. However, recent negotiations between the State and Washington Water Power have resulted in an adjudicated minimum flow requirement of 300 c.f.s. from Post Falls Dam, insuring low flows in excess of 200 c.f.s. at Harvard Road.

b) This is the "dilution zone" at critical flow as defined by Washington State DOE.

c) from the CWMP EIS.

d) Calculated from info. in the CWMP EIS.

e) from the LLSD Facilities Plan Addendum 1978.

38 pg 79

Discussion of the land disposal alternatives C, D and E should include an estimation of the resultant water quality changes that might occur in the Little Spokane River and/or Long Lake.

39 pg 91 Para. 3:

Wet process plating wastewater is an important constituent of both present and projected future industrial wastewater flows for the Spokane area. This item should be added to the list of industrial wastewater types in paragraph 3.

40 pg 92 Para. 2 (Discussing Aquifer Water Quality)

Even though sufficient data may not exist to make a "definitive" estimate of the change in aquifer water quality resulting from sewering, perhaps the EIS could make border assumptions and estimate a range within which the water quality changes might fall. If the reason for sewering is primarily to prevent future inevitable contamination, this should be clearly stated and perhaps semi-quantified.

41 pg 92 Para. 3

The EIS preparers should investigate information sources other than the CWMP report to find out what interim wastewater treatment/disposal facilities presently exist.

42 pg 93 Table 2-11

The expected industrial wastewater flows expected in the CWMP Facilities do not agree with industrial wastewater source information in the CWMP Report (Table II-4 and pg II-60 to II-63). The EIS should explain the reason for the divergence.

43 pg 95 Para. 2 and 3

Mention should be made of the problems, including litigation, that the City of Spokane has been having a connection with sludge disposal operations.

44 pg 98 Para. 4

Our review of the '208' Plan revealed that the Plan, in short, recommended that NPDES permits for Spokane River discharges upstream of Upriver Dam should not be issued without very careful consideration and evaluation of their potential impact upon groundwater. We did not find a recommendation that the discharge be potable.

45 pg 99 Para. 2 (Corrections)

- The LLSD WWTF discharge will be of secondary effluent quality with chlorine disinfection and chlorine removal.

- Before reaching 1 MGD the facility will be modified to accomplish 85% phosphorus removal.

- Parallel construction of equalization basins, clarification basins, chlorine contact tank and chlorination/dechlorination equipment in the LLSD facility eliminate the possibility of untreated bypasses. In the event of unit breakdowns, some degree of treatment will always be provided.

- Public and agency review has been completed on the LLSD facility. An emergency storage pond was not required by the apprpovals.

46 pg 100 Para. 2

Regardless of whether or not the CWMP analyzed the potential for migration of wastewater contaminants from the land disposal areas proposed in Alts. C and D, the EIS should do so. Generally, insufficient information is provided for the reader to make a satisfactory comparison of alternates.

47 pg 111 Para. 4

The LLSD WWTF will occupy approximately 12 acres rather than 40 as implied in this paragraph. The same comment applies as well to Table 2-16 on page 115.

48 pg 113 Para. 1

We have seen the rare Pilated Woodpecker and also Bald Eagles along the Little Spokane River near the confluence site.

49 pg 118 Para. 2

Mention should be made of existing odor problems at the Spokane WWTF.

50 pg 119 Para. 3

The EIS states that long term land use requirements must be considered in the weighing of alternative plans---then it does not present any information on long term land use requirements.

51 pg 125 (Table 2-22)

This table compares user charges for the various alternative plans. In Footnote (4), the monthly user charge of $15.00/month/service in Liberty Lake Sewer District is contrasted with those of the CWMP alternatives. It should be pointed out that $15.00 per month is the total charge for LLSD customers. In contrast, the CWMP user charges do not include ULID financing provisions and unique construction costs.

52 pg 126 Para. 3

Replace "LID" in this paragraph with "ULID". In addition, the costs of on-site wastewater treatment/disposal systems should be discussed here.

53 pg 127 Table 2-23

The EIS does not mention the use of large amounts of alum for phosphorus removal. The Spokane WWTF used 3,100 tons of liquid alum last year and paid $120 per ton (the cost of the alum has increased 100% over the past 2 years). Assuming that the new plant is approximately 40% larger than the present one, alum consumption under Alt. A would be approximately 4,000 to 5,000 tons per year. The cost would be $480,000 to $600,000. Total cost for phosphorus removal, including additional sludge dewatering and disposal costs would add an additional $600,000 to $880,000 (based on experience at the Spokane Plant---Gale Olrich - pers. comm.). We are concerned that these costs may not have been considered in the cost-effective comparison of alternates.

54 pg 128 Para. 2

It appears from this paragraph that phosphorus removal in relevant alternative plans will be accomplished without alum usage, since only polymer costs are mentioned. If so, the type of phosphorus removal design should discussed. The last paragraph on the page, however, mentions the use of alum. We are confused as to what design is planned for phosphorus removal.

55 pg 142 Para. 2

We agree that certain areas of sparse development could be left out of the Priority Sewer Service Area. However, there must be a mechanism to insure that population density does not increase in these areas.

56 pg 154 (First paragraph under the title "Wetlands")

The shorelines of the Spokane River and the shorelines of Newman Lake should be added to the last sentence, where significant wetlands of Spokane County are listed.

57 pg 154 Last sentence on the page:

Not only large animals requiring large continuous areas of wildlife habitat are adversely affected by encroaching development. Birds and other small wildlife species become scarce because of the presence of humans (including their structures and pets).

58 pg 177 Table 2-39

- Does not summarize downstream surface water quality and beneficial use impacts of the alternatives.
- The table mentions the elimination of public health risks through the elimination of the LLSD discharge. This discharge was examined carefully by the EPA and DOE and other reviewing agencies. The consensus was that the discharge would not constitute a significant threat to public health or the aquatic ecosystem. Water quality and biological testing is ongoing and will continue to monitor the effects of the discharge. Alternatives B and D will eliminate the LLSD discharge but will replace it with a larger discharge of poorer quality in a stretch of the river where there is relatively little mixing and where there are very strong indications that the river is affecting nearby groundwater. This Felts Field discharge is dangerously close to two very large city water supply wells, as discussed earlier in the EIS.
- Costs of Alernative Plans are not totally represented.

59 Pg 180 Table 2-41

- Under the Heading "Spokane River Fishery": Heavy metal, ammonia, chlorine residual and other toxic material increases will probably adversely affect egg, fry and adult stages of fish downstream of the Spokane treatment plant outfall.
- Under the Heading "Land Use Impacts": There would probably be increased odor problems near the Spokane WWTF and storage basin site.
- Under the Heading "Costs": Costs are not completely represented. The ULID and hookup charge should be added here.
- Under the Heading "Energy and Chemicals": It may not be possible to pump from storage basins during low electrical power demand hours because of operational requirements of the WWTF.

60 pg 180-184 Tables 2-41, 2-42, 2-43, 2-44, 2-45

- Under the Heading "Energy and Chemicals": No mention is made of alum use in Alternates A through E.

TABLE A

CWMP: Calculated Increases in River Concentrations of Selected Constituents*

Year 1992 (19.25 c.f.s.) for 12.5 MGD Increase	[Effl.]	RIVER FLOW $\bar{x}$ flow 7570 c.f.s.	 Q7-10 560 c.f.s.	 Q7-10 dil. zone 84 c.f.s.
Dilut. Ratio of Increase	--	1/394	1/30	1/5.4
Total Nitrogen (mg/l N)	30	.075	.99	5.6
Ammonia-Nitrogen (mg/l N)	14.6	.036	.48	2.7
Total Phosphorus (mg/l P)	1.2	.003	.040	.22
T - Chlorine Residual (mg/l Cl)	.4 - 1.0	.001 - .0025	.013 - .033	.074 - .185
Fecal Colif. (MPN/100 ml)	< 200	< 0.5	< 6.6	< 37
BOD$_5$ (mg/l)	21	.052	.69	3.9
Year 2002 (47.3 c.f.s.) for 30.69 MGD Increase				
Dilut. Ratio of Increase	--	1/161	1/12.8	1/2.78
Total Nitrogen (mg/l N)	30	.19	2.3	11
Ammonia-Nitrogen (mg/l N)	14.6	.09	1.1	5.3
Total Phosphorus (mg/l P)	1.2	.007	.094	.43
T-Chlorine Residual (mg/l Cl)	.4 - 1.0	.0025 - .0062	.03 - .08	.14 - .36
Fecal Colif. (MPN/100 ml)	< 200	< 1.2	< 16	< 72
BOD$_5$ (mg/l)	21	.13	1.6	7.6

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*CWMP Alternate A - Regional Facility discharging upstream from Riverside State Park (calculations by MAK Consulting Engrs.) This table takes into account only the increase above present conditions.

TABLE B Calculated Increases in River Concentrations of Selected Constituents*

		RIVER FLOW		
	Year 1992 Effluent (44 MGD)	$\bar{x}$ flow 7570 cfs	Q7-10 560 cfs	Q7-10 dil. zone 84 cfs
Dilution Ratio	--	1/111	1/9.2	1/2.2
Total Nitrogen (mg/l N)	30	0.27	3.3	13.5
Ammonia-Nitrogen (mg/l N)	14.6	0.13	1.6	6.6
Total Phosphorus (mg/l P)	1.2	0.011	0.13	0.54
T-Chlorine Residual (mg/l Cl)	.4-1.0	0.004-.009	0.04-0.11	0.18-0.45
Fecal Coliforms (MPN/100 ml)	$<$ 200	$<$ 1.8	$<$ 22	$<$ 90
BOD$_5$ (mg/l)	21	.19	2.3	9.4

		RIVER FLOW		
	Year 2002 Effluent (66 MGD)	$\bar{x}$ flow 7570 cfs	Q7-10 560 cfs	Q7-10 dil. zone 84 cfs
Dilution Ratio	--	1/7.5	1/6.5	1/1.8
Total Nitrogen (mg/l N)	30	0.40	4.6	17
Ammonia-Nitrogen (mg/l N)	14.6	0.19	2.2	8.1
Total Phosphorus (mg/l P)	1.2	0.016	0.18	0.67
T-Chlorine Residual (mg/l Cl)	.4-1.0	.005-.013	.06-.15	.22-.56
Fecal Coliforms (MPN/100 ml)	$<$ 200	$<$ 2.7	$<$ 31	$<$ 111
BOD$_5$ (mg/l)	21	.28	3.2	12

* CWMP Alternate A. Regional Facility discharging upstream from Riverside State Park. The table takes into account both the added increase of Alternate A plus the existing discharge (31.5 MGD) to give an appraisal of the total increase in concentrations that would occur comparing a point upstream and downstream of the Proposed Regional WWTF. The ultimate Phase I and Phase II WWTF design flows are used rather than the actual flows predicted for 1992 and 2002. The design flow amounts would be achieved slightly later than the given years.

TABLE C Calculated Concentrations of Selected Constituents in the Spokane River (Riverside State Park) at Mean Flow after addition of effluent from the CWMP regional WWTF Alt. A (Calculated by Michael A. Kennedy Consulting Engineers)

1) Using river water quality averaged over January 1974 to December 1977:

	Present**	Year 1992	Year 2002
Total Nitrogen (mg/l N)	.873*	.95*	1.1*
Ammonia-Nitrogen (mg/l N)	.263	.30*	.35*
Total Phosphorus (mg/l P)	.347*	.35*	.35*
Total Chlorine Residual (mg/l Cl)	--	.001-.0025*	.0025*-.0062*
Fecal Coliforms (MPN/100 ml)	3.0	3.5	4.2

2) Using river water quality averaged over January 1978 to September 1979:

	Present**	Year 1992	Year 2202
Total Nitrogen (mg/l N)	.832*	.91*	1.0*
Ammonia-Nitrogen (mg/l N)	.098	.13	.19
Total Phosphorus (mg/l P)	.108*	.11*	.12*
Total Chlorine Residual (mg/l Cl)	--	.001-.0025*	.0025*-.0062*
Fecal Coliforms (MPN/100 ml)	105	106	106

* Concentrations in excess of recommended maximum levels:

Total-N	(.3 to .5 mg/l) for prevention of algal blooms
Ammonia-N	(.29 mg/l as N) This concentration has an equilibrium un-ionized ammonia concentration of .02 mg/l at 19°C and pH 8.3
Total-P	(.05 mg/l as P) recommended maximum for rivers flowing into reservoirs
Tot. Cl. Res.	(.002 mg/l) to avoid toxicity to fish
Fecal Coliforms	(the median should be less than 100 MPN/100 ml; no more than 10% of samples should be above 200/100 ml)

** Data taken from the CWMP-EIS

TABLE D Specific Areas of Water Quality Assessment Covered in LLSD and CWMP Documents

	LLSD Fac. Plan Addend.							CWMP-EIS						
Type of Assessment	Mean River Flow	Monthly Mean River Flow	Q7-10	Q7-10 Dilution Zone	Lowest Recorded Flow or Most Critical Time	Comparison with Water Quality Standards	Comparison with Drinking Water Standards	Mean River Flow	Monthly Mean River Flow	Q7-10	Q7-10 Dilution Zone	Lowest Recorded flow or Most Critical Time	Comparison with Water Quality Standards	Comparison with Drinking Water Standards
Effluent Dilution	X		X	X	X	X								
Total Solids			X	X	X									
Total Suspended Solids			X	X	X	X								
Total Dissolved Solids			X	X	X		X							
Dissolved Oxygen Sag Analysis			X	X	X	X	X							
Fecal Coliforms			X	X	X	X	X	X					X	
Virus Contamination			X	X	X									
Algal Nutrients (T-N, T-P)		X	X	X	X	X		X^b						
Chlorine Residual		X	X	X	X	X		X^b		X^{ab}			X	
Un-ionized Ammonia			X	X	X	X		X^b		X^{ab}			X	
Non-toxic cations			X	X	X									
Toxic and non-toxic anions			X	X	X	X	X							
Heavy Metals			X	X	X	X	X	X^b					X	
Toxic Organic Compounds			X	X	X	X	X							
Combined Effect of Idaho Discharges on Algal Nutrients		X												

a) Information contained in "Errata"
b) Information is given in the EIS document, but we feel it is incomplete or inadequate

Response to Comments from the Liberty Lake Sewer District

1. These general concerns are a summary of specific comments contained in the rest of the Liberty Lake Sewer District letter. The general concerns are addressed in response to the specific comments.

2. See Tables 2-1 and 2-2 and accompanying discussion in the revised water quality impact analysis, Chapter 2.

3. Water quality impacts are assessed at three different flow regimes in the revised water quality impact analysis, Chapter 2 (median flow of the critical summer month, Q_{7-10} flow, and 15 percent of the Q_{7-10} flow which represents the dilution zone). EPA feels the use of the lowest-ever-recorded flow to assess water quality is too conservative and is not indicative of potential adverse impacts.

In comparison to fish, very little data exist on the acute and chronic toxicity values for benthic invertebrates. The data do suggest, however, that these organisms can tolerate higher concentrations of heavy metals and toxic compounds than fish. Thus, the EPA maximum and 24-hour average values should protect benthic invertebrates as well as fish. Consequently, it is felt that a separate assessment of impacts to invertebrates is unnecessary.

4. See the revised water quality impact analysis, Chapter 2.

5. Comments noted.

6. Alternative cost breakdowns provided in the Draft EIS were as detailed as base data from the project engineers allowed. Several new project suboptions, including a land application alternative in the West Plains area, were recently developed by the project engineers; they are briefly analyzed in Chapter 1.

7. The scheduling of facilities development presented in the CWMP is probably optimistic, but it represents the county's desired time frame. The county should proceed toward the earliest possible elimination of on-site waste disposal over the Spokane Valley Aquifer.

During the CWMP's design review phase, DOE must ensure that the equalization basins are sized properly and constructed on a schedule that will avoid overloading the Spokane STP or increasing CSOs. County flows into the Spokane city interceptor system cannot be allowed to increase CSOs or primary-treated stormwater discharge.

8. This addition error has been corrected in both the CWMP and this EIS. The revised number is included in Table 2-20.

9. Comment noted.

10. The updated EPA water quality criteria for protection of freshwater biota were printed in the Federal Register, Vol. 45, No. 231, pages 79318-79323, on November 28, 1981 (see Table 2-2 of this report).

11. This discrepancy has been corrected; please refer to Table 2-4 and the revised phosphorus discussions contained in the water quality impact analysis of Chapter 2.

12. Expected concentrations of total phosphorus due to each alternative are presented in Tables 2-7, 2-8, and 2-10 through 2-13 in the revised water quality impact analysis, Chapter 2. Projected river concentrations of ortho phosphorus are not included, as credible data on effluent concentrations could not be obtained.

13. See clarification in the section entitled Nitrogen in the revised water quality impact analysis, Chapter 2.

14. See Table 2-6 in the revised water quality impact analysis, Chapter 2.

15. EPA feels adequate data necessary to calculate these parameters do not exist. Refer to the discussion in the water quality section of Chapter 2 entitled Dissolved Oxygen Decreases Due to the No-Action Alternative.

More studies are necessary to adequately describe the individual sources and amounts of toxic compounds and pollutants in the Spokane River. The Waste Load Allocation Study has only begun the process of identification and quantification.

16. See mitigation measures in the revised water quality impact analysis, Chapter 2.

17. The missing citation is as follows: Hall, Warren; Spokane Audubon Society, telephone conversation.

18. The water use figures listed as "million gallons per day", should have been listed as millions of gallons per year, resulting in the 10 cfs and 27 cfs averages.

19. Comment noted. EPA was not aware of this water right.

20. Comment noted.

21. The focus of the entire EIS is on the environmental changes created by the CWMP above and beyond existing conditions. This is why the increment of flow beyond present Spokane STP discharges is considered.

22. See Table 2-2 and accompanying discussion in the revised water quality impact analysis, Chapter 2.

23. Water contact recreation is a popular use of the Spokane River in the stretch below the Liberty Lake waste discharge. On the other hand, contact recreation below the Spokane STP is discouraged because of treacherous water conditions.

24. Correction noted.

25. See the revised water quality impact analysis in Chapter 2.

26. The statement on page 65 was made in the context of water-oriented recreation. EPA does not feel the importance of Riverside State Park has been underrated.

27. No attempt has been made to accentuate the impacts of the Liberty Lake discharge or to downplay the impacts of the Felts Field discharge.

28. The similarity of impacts refers only to the 7.08 MGD increase in flows from the Spokane STP.

29. See Tables 2-7 through 2-19 and accompanying discussion of the revised water quality impact analysis. EPA feels that a proper water quality analysis should only evaluate those pollutant parameters that could increase to unacceptable levels due to the proposed alternatives. A "laundry list" of water quality parameters which have no relevance to the proposed project is unnecessary.

30. See Tables 2-7 and 2-19 and accompanying discussion in the revised water quality impact analysis, Chapter 2.

31. Increased egg and fry mortality does eventually result in decreased adult fish populations. The intent of focusing on a particular life history stage is to show that pollutants will produce differential intraspecific impacts.

32. The statement concerning avoidance of ammonia by fish has been omitted in the revised water quality impact analysis, Chapter 2.

33. This increase is duly noted.

34. See the discussion in the section entitled Dissolved Oxygen Decreases Due to the No-Action Alternative, in the water quality impact analysis of Chapter 2.

35. Refer to response number 3 on a preceding page.

36. A revised water quality impact analysis of no-action and Alternative A are presented in Chapter 2.

37. Refer to Tables 2-6, 2-7, 2-8, 2-10, 2-11, 2-12, and 2-13, and the accompanying discussion in the revised water quality impact analysis, Chapter 2.

38. Alternatives C, D, and E have been dropped from further consideration by Spokane County.

39. EPA agrees that wet process plating should be added to the list.

40. The EIS did not attempt to quantify the groundwater quality implications of Spokane area growth and nonpoint pollutant sources because these subjects are addressed in the county's 208 program. Further work at impact quantification should occur through the 208 program as specific projects are proposed over the aquifer.

41. Compilation of interim disposal facilities was an assigned task of the CWMP. This effort has not been repeated by EPA in preparing the EIS. The CWMP list has been reviewed by both Spokane County and DOE.

42. Table 2-11 in the EIS lists only the industrial flows expected to be added to the county waste flows going to the Spokane STP. It does not include all existing industrial flows in the proposed service area. Many of the industries are not expected to hookup to the county's interceptor system.

43. City staff indicates that the suits regarding the Spokane Northwest landfill have been settled in favor of the city (Robison pers. comm.). The legal actions challenged expansion of the landfill. The city is now under contract to provide its liquid sludge to a commercial venture that will compost the material and produce a soil amendment. This composting will occur off of the aquifer in the West Plains area. This will reduce the chances of contaminating the aquifer with sludge leachate.

44. The recommendation for discharge of potable quality effluent above recharge areas is contained on pages 46 and 47 of the April 1979 edition of the Spokane Aquifer Water Quality Management Plan. This recommendation has subsequently been deleted, however, on an errata sheet.

45. Comments noted.

46. Alternatives C and D have been dropped from further consideration by Spokane County, so further comparison is not necessary.

47. Comment noted.

48. Comment noted. Use of the Spokane confluence treatment site is no longer being considered.

49. Occasional odor problems are experienced in the vicinity of the Spokane STP. These problems, however, are not expected to hinder the implementation of the CWMP.

50. The relationship of the proposed wastewater facilities to future land use designations is discussed on page 116 and listed in Table 2-17 of the Draft EIS.

51. This contrast is duly noted. Table 2-22 presents a revised estimate of CWMP-related user costs.

52. The correction of "LID" is noted. Costs for running a connector from existing homes to a new collection system in the street is expected to range from $300-$1,300 per dwelling (Maxwell pers. comm.). Persons constructing new homes with on-site disposal facilities (septic tanks and drain field) should expect to pay a $1,500-$2,000 installation fee and a $100 pump-out fee every 3-5 years.

53. The costs for alum have been considered, but the alum poundage was not reported in the CWMP.

54. Phosphorus removal is planned to continue as at present. This includes use of alum. Paragraph 2 should also mention lower alum demands.

55. Spokane County is the land use planning body with responsibility in this area. The county should control population densities by following the framework presented in its Comprehensive Land Use Plan.

56. EPA agrees that these areas should be added to the list of wetlands in the study area.

57. Comment noted.

58. This table lists only those impacts that are generally the same for the six action alternatives. Downstream water quality and beneficial use impacts are included for each alternative on Tables 2-41 to 2-46 because they vary with each alternative.

59. "Spokane River Fishery" impacts are updated in the water quality impact analysis of Chapter 2. The possible increase in odor problems is noted. The ULID and hookup charges are a common impact; therefore, they were listed only in Table 2-39. The comment about pumping during low electrical energy demand is noted.

60. Alum use is intended according to Economic and Engineering Services, Inc., but usage figures are not included in the CWMP.

CITY OF SPOKANE, WASHINGTON

SPOKANE
ALL-AMERICA CITY

DEPARTMENT OF PUBLIC WORKS & UTILITIES

GLEN A. YAKE, P.E.
Manager - Engineering

JOHN A. SWANSON
Director of Public Utilities

May 20, 1981

Kathryn Davidson
Environmental Evaluation Branch (M/S 443)
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Re: Public Hearing May 14, 1981 - DEIS Comprehensive Wastewater Management Plan, Spokane County

Attached is a copy of the City of Spokane's testimony presented at the referenced public hearing.

Very truly yours,

Glen A. Yake, P.E.
Manager-Engineering

Enclosure

GAY:ajg

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City of Spokane
Testimony at EPA Public Hearing
Comprehensive Wastewater Management Plan
for Spokane County
Thursday, May 14, 1981 - 7:30PM
Spokane County Health District Auditorium

Thank you for the opportunity to present the City of Spokane's views concerning the subject of Wastewater Management in the greater Spokane Metropolitan Area. We will limit our presentation to broad conceptual ideas which have been embodied in the County's "201" Study.

In the late 1960s the City was advised that its upgraded primary treatment plant was inadequate and increased treatment to secondary level was needed. The final order required not only secondary level but 85% P removal. The City proceeded with state and federal financial assistance and built its present advanced waste treatment plant. Additionally we were told we now had a "regional" plant which would be capable of serving areas outside the corporate boundaries. The City then proceeded to invest $50,000,000 of local, state, and federal funds to produce this mandated "Regional Advanced Wastewater Treatment Plant."

Meanwhile the County was faced with a recurring problem in the metorpolitan area. The County prepared a plan to attack the problem in the metro area north of the City. The plan contemplated a County owned collection system with treatment at a site along Rutter Parkway. However, two actions shelved this work.

First was the previous declaration that the City's Advanced Wastewater Treatment Plant was a regional facility. This, the County was told, meant no federal money could be spent to build another plant in the area. Second, during the preparation of the County plan EPA had declared the Spokane Valley-Rathdrum Prairie Aquifer a Sole Source Aquifer. Since the boundary extended north to the Little Spokane River the proposed land treatment along Rutter Parkway was not acceptable.

These actions by the Department of Ecology and Environmental Protection Agency encouraged the City and County to enter into an agreement and conduct the study under discussion here. As part of this work the City and County entered into an interlocal agreement for the City to provide sewer service to the County under mutually satisfactory conditions.

All of these past actions have been at the prompting of DOE and EPA in a mutual effort to protect the surface and ground waters from contamination. The City has participated in the "201" Study with the County and concurs in the recommendations of the report. A disturbing action, however, has come about in the past two months that has great potential for eliminating the benefits to be derived from the City/County Interlocal Agreement. This is the publication by the Department of Ecology of its Spokane River Wasteload Allocation Study.

A channel view or careless interpretation of this study could lead one to believe that the City will have to place a moratorium on new sewer connections to its sewage system. If this interpretation would prevail there is no way for the County to connect to the existing City system.

The only apparent other solution is either a multi-million dollar addition to the treatment plant to increase phosphorus removal efficiency above 85% and/or an even more expensive construction of a land disposal system. Both of these alternatives being beyond financial capabilities.

The City urges that the EPA and DOE focus attention on the Spokane Valley-Rathdrum Prairie Aquifer. The impression one gets from reading the River Allocation Survey is that the Department of Ecology has spent considerable time and effort in evaluating the Spokane River quality to the exclusion of the Aquifer. The City is gravely concerned that the River Allocation Study not only places the protection of the Aquifer in jeopardy but also threatens the City/County cooperative spirit and the recommendations of the "201" Study being considered here.

The City recommends, therefore, that the DOE and EPA approve the Comprehensive Wastewater Management Plan as submitted and place the design and construction of the facilities outlined high on the state and federal priority lists. This will allow the area jointly to rapidly proceed on a development plan toward protection of both the Spokane River and the Spokane Aquifer. If approval is not granted the opportunities for meaningfull progress will be diminished. Years will pass before the citizens of this community will be presented with an opportunity to support or reject a program as well conceived, described, reasonable and attainable as the one before them now.

Thank you.

Glen A. Yake, P.E.
Manager-Engineering

Response to Comments from the City of Spokane

1. Refer to Chapter 3 of this report for EPA's recommended action on the proposed project.

CITY OF SPOKANE, WASHINGTON

SPOKANE
ALL-AMERICA CITY

CITY PLAN COMMISSION
309 City Hall
JEAN BESCHEL, President

VAUGHN P. CALL, A.I.P.
Manager – Planning

E. T. CLEGG, A.I.P.
Planning Director

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April 2, 1981

Ms. Kathryn M. Davidson M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Ms. Davidson:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the Spokane County Comprehensive Wastewater Management Plan. Of the alternatives presented in the DEIS, I feel that Alternative A produces the greatest beneficial impact to the aquifer for the least cost. I feel this spirit of balance and compromise is essential, and should be the basis of continued work toward a final solution.

1 However, all alternatives, except Alternative E, involve increased discharge of treatment plant effluent into the Spokane River. Since the Washington State Department of Ecology is currently studying the phosphorous loading problem in the River with the intent of establishing waste load allocation limits, any alternative prescribing River discharge of effluent should be re-evaluated.
2 The analysis of additional alternatives involving land application of Spokane Treatment Plant effluent may be appropriate before the final environmental impact statement is published.

If additional alternatives are to be considered, I would suggest they include land application sites beyond the aquifer sensitive area of the Spokane Valley-Rathdrum Prairie Aquifer. I feel it is appropriate to compare the effects of land application beyond the aquifer sensitive area to the Rutter Parkway area. It may also be appropriate to compare the cost and need for seasonal land application as opposed to year-round application.

Again, thank you for the opportunity to comment.

Sincerely,

Charles L. Dotson, for
Marion B. Hess
Acting Planning Director

MBH:CLD:skt

Response to Comments from the Spokane City Planning Department

1. A re-evaluation of water quality impacts is presented in Chapter 2.

2. Additional land disposal alternative have been considered by the CWMP engineers. Refer to Chapter 1 for a brief discussion of these Alternative A suboptions.

SPOKANE COUNTY

AIR POLLUTION CONTROL AUTHORITY

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April 2, 1981

Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Ms. Davidson:

After reviewing the draft Environmental Impact Statement for the Spokane County Comprehensive Wastewater Management Plan, we have on primary concern. That concern is that all possible measures to abate odor be taken.

1 The Storage/Equalization Basins have a potential of causing great odor problems. The fluctuating wastewater levels would seem to make this type of facility a greater potential problem than a normal sewage lagoon. We request that odor control be a primary concern in the design of these basins and that our agency be consulted before any final design is accepted. In locating these facilities, the odor problem should also be a primary concern.

2 It appears that the old Acme Gravel Pit at Broadway and Carnahan was not considered for a storage basin sight. Possibly, because it does touch the aquifer. However, we request that you consider this sight for two reasons. First, it is in a more industrialized area than the other sites and second, it is my understanding that the city already owns this land.

3 The same design and siting criteria, that of abating odors, should be applied to the treatment plants.

4 The impact due to population growth from this type of project is nearly impossible to predict. However, it appears that growth will follow the sewering of any area. That being the situation, it may be possible to direct growth to the north by sewering the north area first. Growth to the north may be

Kathryn M. Davidson, M/S 443
Environmental Protection Agency
Seattle, Washington
April 2, 1981
Page 2

4 more environmentally sound since it takes population away from the stagnate air basin in the valley and may concentrate urban runoff in a less sensitive area to the north. Thus, you should consider sewering the north region first.

Thank you for allowing us to review this draft Environmental Impact Statement.

Sincerely,

SPOKANE COUNTY AIR POLLUTION
CONTROL AUTHORITY

William T Murphy
William T. Murphy
Air Quality Engineer

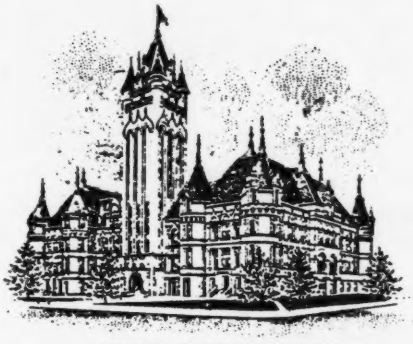
Response to Comments from the Spokane County Air Pollution Control Authority

1. EPA concurs that odor control should be a major concern in equalization basin design. DOE should consult with the Air Pollution Control Authority prior to accepting the equalization basin design specifications from the county.

2. The gravel pit at Broadway and Carnahan was considered, but because it penetrates into the aquifer, it was dropped from consideration (Maxwell pers. comm.). The chances of aquifer contamination were felt to be too great.

3. Comment noted. No additional treatment plants are included in the county's preferred alternative.

4. The staging of interceptor construction will ultimately be agreed to by the county and DOE. The county must establish its priorities after considering a variety of factors. The CWMP recommends simultaneous interception of North Spokane and the western portion of Spokane Valley. While sewering of North Spokane first may help to relieve an air quality problem, sewering of the Spokane Valley would reduce the level of domestic wastewater contaminants affecting Spokane's drinking water supply. Each of these factors should be considered prior to initiating interceptor construction.



SPOKANE COUNTY COURT HOUSE

SPOKANE COUNTY

PLANNING DEPARTMENT

BROADWAY CENTRE BUILDING N 721 JEFFERSON STREET
PHONE 456-2205
SPOKANE, WASHINGTON 99260

May 7, 1981

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

Thank you for the opportunity to comment upon the Draft Environmental Impact Statement for the Spokane County Comprehensive Wastewater Management Plan. Although Staff has presented comments on the Draft in a letter to Ms. Elizabeth Corbyn dated February 19, 1981, all Staff comments upon the Draft E.I.S. document are hereby formally submitted as requested by the cover letter of the Draft E.I.S. Because a draft County Comprehensive Plan document was used to develop the Draft E.I.S. document, the major mis-statements are herein corrected since the Generalized Comprehensive Plan has been adopted. Generally, all references within the E.I.S. to a "proposed County Comprehensive Plan," or similar, should be changed to "adopted Generalized Comprehensive Plan." Other Staff comments are as follows:

1 1) Page 13 - In briefly describing the General Sewer Service Area (GSSA) and the Priority Sewer Service Area (PSSA), the phrases "which will probably be sewered . . . within a particular period" leaves the reader with the impression that sewering will occur. This may or may not be correct depending upon future development expansion and activities and availability of funding. If development does not occur to the extent anticipated, then areas within the Priority Sewer Service Area (PSSA) and areas within the General Sewer Service Area (GSSA) may not be sewered. For this reason, Staff suggests the final two sentences under the Section "The Study Area" on Page 13 be written to read as follows:

> "One is the General Sewer Service Area (GSSA), which includes areas which may receive interceptor sewer service by the year 2002. The Priority Sewer Service

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1 1) Contd.

Area (PSSA) falls within the General Sewer Service Area (GSSA) and represents the area which is proposed for interceptor sewer service in Phase I of the Comprehensive Wastewater Management Plan (CWMP) as sewering becomes necessary and funding is available."

2 2) Pages 86-88 - A number of federal, state, and local regulatory controls which exist to protect the Spokane Valley-Rathdrum Prairie Aquifer are mentioned on these pages. But the adopted "Generalized Comprehensive Plan," particularly, Section 10.0.0 of the Plan is not mentioned. Guidelines outlined in Section 10.0.0 discourage further development activities particularly within the Aquifer Sensitive Area (ASA) without appropriate wastewater management and land use control practices. Combined with the adopted ordinances, many water polluting activities which have developed over the Aquifer in the past can be partially prevented or their impacts mitigated.

3 3) Page 91 - It is incorrectly indicated within the second paragraph of this page that there are no regulations which currently exist restricting residential development and restricting use of septic tanks over the Aquifer. However, the adopted "Generalized Comprehensive Plan" coupled with existing and future ordinances and other regulations could be used to mitigate, and even prevent under some conditions, continued septic tank use over the Aquifer. This should be correctly stated in the Environmental Impact Statement.

4 4) Page 116 - Major problems with interpretation of the adopted "Generalized Comprehensive Plan" begin at this point in the Environmental Impact Statement. As stated in the second paragraph under the section of the document entitled "Planned Land Use Designations for the Proposed Sites," treatment facilities would be considered incompatible with the "Rural" Category. This is not necessarily true depending upon the environment where the treatment facilities are being proposed and depending upon the design of the treatment facilities themselves. As stated in the adopted Plan text on Page 1 of Section 4.0.0, " occasionally, small scale commercial and industrial uses will be found to serve the local needs of the surrounding populations . . ." Within the same Section, Decision Guideline 4.5.1 states that "Buffering and/or landscaping will be used to mitigate the difference between proposed development

4 4) Contd.

and existing uses;" which suggests that problems will be mitigated before facilities are established. Section 10.0.0 dealing with Water Quality and Section 22.0.0 of the adopted "Generalized Comprehensive Plan" regarding Utilities also encourage treatment of water regardless of the Land Use Category. Depending upon a facility's location, Mitigation Measures described on Page 119 and Table 2-19 on Page 121 are means which can be used to maintain compatibility between a Rural residential or agricultural environment and proposed treatment facilities.

5 5) Page 138 - The Draft Environmental Impact Statement neglects discussion of the 1968 Comprehensive Plan formerly adopted and in use prior to the recent adoption of the "Generalized Comprehensive Plan." It is necessary to discuss this 1968 Plan since it is much more generalized than the adopted 1980 "Generalized Comprehensive Plan." Infact, it affords no specific protection to either groundwater or surface water. It is suggested by the Environmental Statement document that the adopted "Generalized Comprehensive Plan" is not concise in its policies. While problems exist with new plans and their detail, the 1968 Plan contains only one residential category and provides fewer growth management policies than the adopted 1980 "Generalized Comprehensive Plan." The reader is not left with this impression after reading the Land Use "Conclusion" on Page 142.

The Land Use Map (as shown on Page 139 of the E.I.S.) has been changed. Furthermore, the Land Use Map itself does not function the same way as a zoning map or other ordinance maps' function. The Land Use Map shows areas where particular category policies (Sections 1-7 of the Plan) apply. Additionally, while the adopted Plan Text provides four (4) maps relating to policies presented in the adopted 1980"Generalized Comprehensive Plan", the Planning Department has numerous public studies and informational maps which are adopted by reference within the County Commissioners' Resolutions of Plan Adoption. Such information can be useful when determining which "Generalized Comprehensive Plan" policies are applicable to a situation. Therefore, although not all maps are provided within the Text, maps are abundant and available to the public through the Planning Department. In conclusion, because there are a number of adopted policies and information is abundant, reference within the E.I.S. to the "land use map" as "the Plan" is inacurrate. The adopted "Generalized Comprehensive Plan Map and Text" and all other references and adopted plans and maps are an inherent part of the decision-making process and any one element will not be isolated and used by itself.

6 6) One is left with the impression after reading Page 138 of the Draft E.I.S. that the Fringe Study Section of the adopted "Generalized Comprehensive Plan" (now called Section 30.0.0) is the area of the Plan which pertains most to the Aquifer, the area in question. However, Section 10.0.0 on Water Quality and Section 22.0.0 on Utilities contain policies significantly impacting the growth, its timing and its location in the Valley and in areas north of the City of Spokane. In the conclusion of the Draft E.I.S. it is indicated that '208' recommendations are not utilized in the Plan, when in fact, Section 10.0.0 of the adopted "Generalized Comprehensive Plan" ARE the substantive '208' recommendations assigned to Spokane County. There are many policies in effect now which will have a large impact upon development in the Valley and in areas north of the City of Spokane.

7 7) The Draft E.I.S. for the Comprehensive Wastewater Management Plan (CWMP) briefly discusses the E.I.S. completed under the State Environmental Policy Act (SEPA) for the now adopted "Generalized Comprehensive Plan." While the SEPA document does indicate that the Plan may set a formal policy for land use sprawl, the SEPA document is also careful to point out that sprawl costs could be greater without a Plan than they are with a Plan (P. 201, SEPA document). Implicit and inherent in the discussion is the principal that harmful sprawl may indeed occur, but is less likely to occur if various growth management tendencies associated with utility availability are implemented. Therefore, the Draft E.I.S. of the Comprehensive Wastewater Management Plan (CWMP) is incorrect by leaving the impression that sprawl would be greater under the adopted "Generalized Comprehensive Plan" than it is currently without the Plan.

8 8) The Draft E.I.S. document makes errors in its discussion on population projections and estimates. First, the discussion at the top of Page 141 is a good illustration why only documentable estimates or projections should be used in a report of this importance. It is stated in the Draft E.I.S. that a low population projection for the County represents an increase of around 91,000 persons and that a high population projection represents an increase of 133,000 people between 1970 and 2000. When contacted by phone, by '201' E.I.S. Consultants, the Planning Staff hereby reported projection figures provided by the Bonneville Power Administration and by the Washington State Office of Financial Management. These figures are:

	Total County By Year 2000	Population Increase
Bonneville Power	408,000	120,513
Washington State	376,661	89,174

4 4) Contd.

and existing uses;" which suggests that problems will be mitigated before facilities are established. Section 10.0.0 dealing with Water Quality and Section 22.0.0 of the adopted "Generalized Comprehensive Plan" regarding Utilities also encourage treatment of water regardless of the Land Use Category. Depending upon a facility's location, Mitigation Measures described on Page 119 and Table 2-19 on Page 121 are means which can be used to maintain compatibility between a Rural residential or agricultural environment and proposed treatment facilities.

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Washington State	376,661	89,174

8 8) Contd.

Secondly, it is incorrectly assumed on Page 141 of the Draft E.I.S. that the adopted "Generalized Comprehensive Plan" is based upon population projections rather than upon population accommodation---there is a serious difference here. Population projections were presented to the Citizens Coordinating Committee, as projected by the State and Bonneville Power, so that the Committee could compare these projections with the populations their proposal would accommodate. Again, the Planning Department has made no official projections, but have only provided available projections. Therefore, the second paragraph on Page 141 should begin by explaining how the Planning Department determined population numbers that could be accommodated by the Plan, rather than explaining a growth projection accompanying, justifying, or substantiating the adopted "Generalized Comprehensive Plan"--- a projection which did not and does not exist. This problem exists again on Page 149 and Page 152 of the Draft E.I.S. Also, in the first paragraph of Page 149, it should be stated that "The Comprehensive Plan is able to accommodate further industrialization---" rather than "anticipates" further industrialization.

Regarding comments on Page 152 within the first paragraph, the "growth pattern" referenced is not "predicted", but rather is "allowed" or "accommodated". Furthermore, the Planning Department is not responsible for allowing or accommodating this pattern since the Generalized Comprehensive Plan is a Countywide document adopted by County decision-makers and implemented by County Staff. Therefore, it should not be inferred that the Plan belongs to the Planning Department.

Again, thank you for the opportunity to comment on this important document.

Most Sincerely,

Robert Hansen

Robert 'Doc' Hansen
Long Range Division
Spokane County Planning Department

RH:wji

CC: Wally Hubbard
Director of Spokane County
County Planning Department

Response to Comments from the Spokane County Planning Department

1. EPA concurs with the suggested revision to wording on page 13 of the Draft EIS. The actual timing of interceptor construction is dependent on the availability of funds.

2. The Spokane County "generalized comprehensive plan" is a planning document and as such does not have the force of law. It was the intent on pages 86-88 of the Draft EIS to list laws and regulations that require strict adherence. EPA agrees that the "generalized comprehensive plan" can exert a strong influence toward aquifer protection through strict enforcement of its water quality policy statements contained in Section 10.0.0.

3. Although the county has adopted policies in the "generalized comprehensive plan" which support the protection of the aquifer, the effectiveness of these policies is dependent on the implementation of the policies through local ordinances and regulations. At the present time, there are no ordinances other than standard permit requirements which restrict development over the aquifer.

4. Comment noted. The paragraph on page 116 should read: "The proposed sites in the county are located in areas designated primarily as rural in the Spokane County proposed comprehensive land use plan; as a result, treatment facilities could be inconsistent with the rural land use designation. A determination of land use consistency would be made based on the surrounding environment and the design of the treatment facilities. If the treatment facilities are determined to be inconsistent with the rural land use designation, a change in the Spokane County land use plan would likely be necessary."

5. Because the 1980 "generalized comprehensive plan" has been adopted by the county, it is the plan of record and, therefore, reference to the 1968 comprehensive plan is not considered relevant to this analysis. Response to the remaining comments is presented in the section of Chapter 2 entitled Consistency Between the CWMP and the County "Generalized Comprehensive Plan".

6. The policies stated in Section 10 on water quality and Section 22 on utilities are also recognized (although not specifically referenced in this section) as pertinent to the analysis of land use and development policies. The Draft EIS did not intend to suggest that the 208 recommendations had not been incorporated into the comprehensive plan but that the precise wording of certain recommendations had been changed. Specifically, the 208 plan recommended that the area outside of the PSSA not be developed at a density greater than one unit per 5 acres until expansion of the PSSA became

necessary. As incorporated in the comprehensive plan, this recommendation was changed to allow for development at densities greater than one unit per 5 acres under certain conditions.

7. Comment noted. The paragraph in the Draft EIS should read: "The county EIS suggests several mitigation measures to discourage sprawl and concludes, under unavoidable adverse impacts, that unless the proposed plan is changed or recommended mitigation measures are adopted, the plan may set a formal policy for land use sprawl. This sprawl would result in a high consumption of land and would incur service and facility costs considerably higher than if development was concentrated."

8. In the absence of an adopted county population projection alternative projections had to be sought for the Draft EIS analysis. As a result of conversations with the county planning staff, the projections stated in the Draft EIS were assumed to be correct.

Comment on growth accommodation noted. The section on Growth Projections in the Draft EIS should read: "The Spokane County Comprehensive Land Use Plan, which was prepared by the Citizens Coordinating Committee, assumes a growth accommodation of 155,000 persons in Spokane County from 1970-2000. A comparison of this growth accommodation with population projections prepared by the Bonneville Power Administration, the Washington State Office of Financial Management, and the CWMP reveals some inconsistency.

"To determine population numbers which could be accommodated by the comprehensive plan, the county planning staff assumed that 50 percent of all county vacant lands in 1970 would be developed by the year 2000 to the lowest designated density within each land use category on the land use map (Figure 2-7) (Hansen pers. comm.). This resulted in a population increase of 155,000 persons from 1970-2000. This compares with alternative population increases from 1970-2000 of about 89,000 persons prepared by the State Office of Financial Management and about 120,000 prepared by the Bonneville Power Administration.

The CWMP projects approximately 398,000 persons in the GSSA (including the City of Spokane) in the year 2002. If projections for the areas outside of the GSSA but within the county (50,000 existing population plus 11,000 projected) are added to the CWMP projections, the total county population projection for the year 2002 is 459,000 persons. This represents a projected increased of 171,500 from 1970-2002.

"In summary, the comprehensive land use plan assumes a population accommodation of 155,000 persons from 1970-2000; the State Office of Financial Management projects an increase from 1970-2000 of approximately 89,000 persons; the Bonneville Power Administration projects an increase of about 120,000 persons from 1970-2000; and the CWMP projects that 171,500 persons will be added to the county's population between 1970-2000."

No reference can be found on page 149 or page 152 regarding a population projection by the county.

The first paragraph on page 149 of the Draft EIS should read: "No estimate has been made of the commercial or industrial development to be sewered by the CWMP. Table 2-11 lists the facilities planner's estimate of industrial flows to be accommodated by the CWMP wastewater system, but the size, location, and type of industry has not been specified. The comprehensive land use plan is able to accommodate further industrialization in the central portion of Spokane Valley. With rapid residential development in the valley and North Spokane, the commercial acreage is also likely to concentrate in these areas. Table 2-29 lists typical runoff waste loads from these land use types."

The second sentence in the first paragraph on page 152 of the Draft EIS should read: "The facilities planners have delineated a 20-year wastewater service boundary (GSSA) for the Spokane area in response to the growth pattern which would be accommodated by the comprehensive land use plan."

Spokane Regional Planning Conference
TRANSPORTATION STUDY DIVISION
Phone 509-456-4325

February 14, 1981

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Davidson:

Thank you for the opportunity to review the Draft Environmental Impact Statement on the Spokane County Comprehensive Wastewater Management Plan.

SRPC's Transportation Study staff concurs with your assessment on page 161 that the population projections used in the facility's plan will have an impact on the existing road system in both the Spokane Valley and in North Spokane.

1 On page 170 it states that preliminary data from the 1980 U.S. Census are available only for the City of Spokane. The preliminary count of persons in households, persons in group quarters, and number of housing units was made available to the Spokane County Planning staff for review last July. However, this preliminary 1980 Census data did not contain information on the number of year-round housing units.

2 Table A-6, page 223. "Control Measures for Carbon Monoxide Reduction," is from the original Air Quality Implementation Plan report, dated December 26, 1978. This document has been amended, dated August 25, 1980 and titled "1979-1980 Revisions to the Transportation Control Plan Element of Spokane's Air Quality Implementation Plan." We suggest using information per Figure 1, page 3.

Very truly yours,

Robert A Vaughan

Robert A. Vaughan, P.E.
Transportation Study Director

RAV/jf
Enc:

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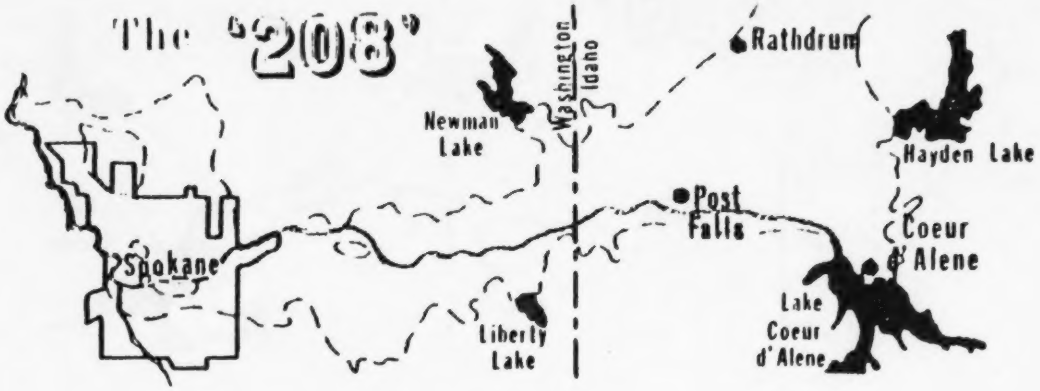
FEB 17 1981
ENVIRONMENTAL EVALUATION BRANCH

Response to Comments from the Spokane Regional Planning Conference

1. The availability of the new census data is noted.

2. The availability of a revised carbon monoxide control measures summary is noted. A copy of the revised summary has been reviewed in preparation of the Final EIS.

The "208"



Spokane Aquifer Study

N. 811 Jefferson Spokane, Washington 99260 (509) 456-3600

February 18, 1981

Ms. Elizabeth Corbyn, Chief
Environmental Evaluation Branch
Environmental Protection Agency
1200 - 6th Ave.
Seattle, WA 98101

Dear Ms. Corbyn:

I have completed my preliminary review of the Draft Environmental Impact Statement for the Spokane County Comprehensive Wastewater Management Plan. The document in general is very well done. However, there are references to local reports that appear to be incorrect and/or misleading.

1 For example, the reader may get the impression from reading the DEIS that County Planning has the responsibility for implementing the Spokane Aquifer Water Quality Management Plan. In reality, the County Planning Department is only one of twenty-six agencies that has been assigned implementation responsibilities and, from reading pages 138 to 142 and reviewing the map on page 139, the reader gets the impression that the Comprehensive Plan and '208' are in conflict. Reference should be made to the Comprehensive Plan text and Chapter 10 dealing with Water Quality. An entirely different impression could be conveyed.

My specific comments on the DEIS are too numerous to put into a letter. I have marked up my report and would be glad to meet with you and the drafters of the DEIS in the near future to clarify discrepencies that appear to me to be of concern.

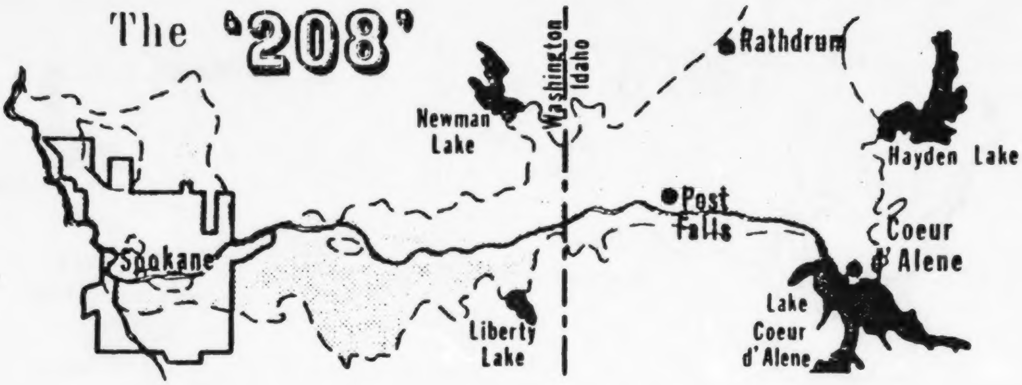
Thank you for the opportunity to comment on the Comprehensive Wastewater Management Plan DEIS.

Sincerely,

Ray Card

Ray Card
'208' Program Manager

RC/set



Spokane Aquifer Study

N. 811 Jefferson Spokane, Washington 99260 (509) 456-6024

May 28, 1981

Ms. Kathy Davidson, EIS Coordinator
EPA Region X
1200 - 6th Ave.
Seattle, WA 98101

Dear Ms. Davidson:

I attended the public hearing held May 14, 1981 on the Spokane County Comprehensive Wastewater Management Plan draft EIS. For the record, I would like to address a subject that was repeatedly raised regarding the lack of a plan for storm water collection and treatment.

2 The original scope of work for the '208' Spokane Aquifer Water Quality Management Plan dealt with "ground disposal" only. It was never intended that the Plan deal with surface water. However, during the development of the Plan, it became evident that aquifer contamination was occurring as a direct result of activities on or near the land surface. This meant that we must deal with other subjects not originally anticipated in the work plan. We asked our consultants, dealing with the Corps of Engineers Metropolitan Region Water Resources Study recommended Sewerage Plan update, to also look at the costs associated with a storm water collection and treatment system. They concluded that a storm water collection and treatment system would cost approximately as much as the proposed sanitary sewer system. Faced with the staggering costs of both systems, we elected to try for a sanitary sewer system and made the recommendation that stormwater be retained on-site and 80% disposed of through "grassed percolation areas" to effect the filtering action of the soil and to obtain biological nutrient uptake through the roots of grasses, thereby taking advantage of the evapotranspiration process. While this recommendation was only aimed at new development, we did recommend this process for major reconstruction projects as well. This, we hoped, would meet our goal of "no further degradation" in the area of storm water runoff. Again, I would emphasize that the '208' Study concluded that the community could not afford both a storm water collection system and a sanitary sewer system. Therefore, we recommended the more effective sanitary sewer system.

Thank you for the opportunity of addressing one of the major concerns raised at the public hearing.

Sincerely,

Ray Card

Ray Card
'208' Program Manager

RC/set

Response to Comments from the Spokane County 208 Program

1. EPA did not intend to indicate the Spokane County Planning Department has sole responsibility for implementing the 208 program. As indicated in your letter, a number of agencies should play a role in implementation. EPA has requested that one or more agencies accept overall implementation responsibility by July 31, 1981, prior to EPA final approval of the plan. In the interim, the Board of County Commissioners holds implementation responsibility (Dubois pers. comm.).

The discussion of pages 138-142 deals with the compatibility of the comprehensive land use plan and the CWMP, not the 208 plan. The major inconsistency between the 208 plan and the comprehensive land use plan appears to be in the strength of their recommendations for limiting growth outside of the PSSA. The 208 plan suggests a one-unit-per-5-acre limit outside the PSSA until the PSSA is sewered. The comprehensive land use plan allows development outside the PSSA to continue using approved interim on-site disposal systems under certain conditions.

2. The additional information regarding 208 plan recommendations and objectives is appreciated.

The Glenrose Association
Route 12, Box 776
Spokane, Washington 99203

May 28, 1981

RECEIVED
JUN 1 1981
ENVIRON [illegible] UATION

To: U.S. E.P.A., Region 10
Re: Draft EIS, Spokane County '201' Wastewater Management Plan

Gentlemen:

The Glenrose Association represents more than three-fourths of the homes in the Glenrose Community. We have been formally organized and involved in land use issues for nearly 10 years. We have historically advocated well-planned growth and conservation/protection of resources, including ground water quality.

1 We are aware of the expense and difficulty involved in distributing copies of the DEIS, however we feel it should be more accessable to the public (library copies were not available and costs of duplication locally would have run over $25). We would like to suggest that, in the future, publications of this importance be made available to individuals and community groups through a process of notification that will afford them the opportunity to order copies in advance of publication at cost.

With regard to the DEIS, numerous areas of concern and conflict are identified and many sound and appropriate mitigating measures are suggested. There appear to be some gaps, however:

2 1)The failure of the DEIS to mention the City of Spokane's "Boyle Report" is puzzling. In view of the acknowledged committment to sprawl in both the County Comprehensive Plan and the '201' plan, the suggestion of additional growth and utility extension in the West Plains area adds signifigantly to land and utility committments and economic considerations.

3 2)The alternative of encouraging growth in other than the aquifer area was suggested by some professionals in response to the County Comprehensive Plan. It is disappointing, therefore, to find that growth to the west, which may be both for the immediate future and the long run, the most desirable approach, has not been addressed.

4 3)The DEIS only briefly addresses the broad economic considerations that accompany the '201' plan. Under the proposed "sprawl" plan, the ultimate economic burden on taxpayers after lateral extensions and hook-up fees, could be enormous. This is especially important in view of the overcommittment to low density residential growth which does not pay its way in terms of supporting local governmental services.

5 4)There is no mention of the life expectancy of the system. What is the degree of seepage we could expect over time? Will means of monitering seepage, breakage, other failures be incorporated in the system?

6 With respect to the Glenrose Community, the DEIS correctly points out, on page 142, conflicts between the PSSA and the County's Land Use Plan. The suggestion is made that these areas be left out of the PSSA. The Glenrose Community strongly concurs. Left unaltered, utility planning would dictate to land use planning.

7 The '201' Plan, as it now stands, needs to be sized down and tightened up to be politically and economically acceptable. The numerous mitigating measures suggested by the DEIS must be implemented. Among the most important: reduction of sprawl and PSSA size, consistency with the County Land Use Plan (by changes in both '201' and the Land Use Plan, as necessary), consistency with the stated goals of both the County Land Use Plan and '208', better coordination between governmental entities, particularly City and County, as well as with the state of Idaho, measures to protect prime and unique farmland and provide for adequate open space and recreational land and other amenities, and also, means of protecting aquifer water quality from contamination through urban storm runoff.

Sincerely,

Sally S. Reynolds

Sally S. Reynolds
The Glenrose Association

Response to Comments From the Glenrose Association

1. EPA regrets that you had difficulty in obtaining a copy of the Draft EIS. Copies were mailed to the city and county libraries in Spokane. Names for our mailing list were taken from previous lists used in the Spokane area and from lists maintained by local agencies. In addition, names were taken at the two EIS public workshops held in Spokane so that interested persons and groups could receive a personal copy of the report.

2. The Boyle Report, otherwise known as The West Plains Area Water and Sewer Plan, was submitted to the City of Spokane in November 1980 and has subsequently been adopted. This plan recommends four phases of sewer and water development for the West Plains area beginning sometime in late 1981 or in 1982. Because the city and county have approved an interlocal agreement to include the West Plains area in the city's sewer and water service area, the city has responsibility for the implementation of the plan. At present, the city has not taken action to implement the plan.

3. Neither the CWMP nor the Draft EIS was prepared as land use planning documents or growth control mechanisms. The CWMP is intended to follow growth as planned by local government entities.

4. The overall economic commitment of the CWMP is addressed in the Draft EIS on pages 163-172. The extent of development envisioned in the county's comprehensive land use plan will undoubtedly require considerable economic outlay to provide the normal public service and utilities infrastructure.

5. Economic and Engineering Services, Inc., indicates that all pipelines will have a life expectancy of 50 years, as will the equalization basins. Pumps will be expected to last approximately 30 years (Maxwell pers. comm.).

The amount of seepage to be expected is unknown. Monitoring wells will be installed adjacent to equalization basins so that leakage can be detected and corrected in a timely manner. DOE's specific monitoring requirements will be developed during the project's design phase.

6. Comment noted.

7. Refer to Chapters 1 and 3 for the county's preferred alternative and EPA's recommended action regarding that proposal. Conditions of CWMP approval are contained in Chapter 3.

Water Quality & Treatment / Wastewater Treatment: Studies, Design, Operation / Industrial Wastewater Management

ESVELT ENVIRONMENTAL ENGINEERING

May 27, 1981

RECEIVED
JUN 2 1981
ENVIRONMENTAL EVALUATION
BRANCH

Kathy Davidson, EIS Coordinator
E P A Region X
1200 6th Street
Seattle, Washington

RE: Spokane County Comprehensive Waste Water Management Plan EIS

Dear Ms. Davidson:

This letter is in response to the Draft EIS issued by EPA for the Spokane County Wastewater Management Plan. My comments are based on my association with 208 Planning efforts for the Spokane/Rathdrum Prairie Aquifer in Spokane County, As you know the Spokane/Rathdrum Aquifer has been designated a "sole source" aquifer under provisions of the Safe Drinking Water Act. This aquifer truly is the sole source of drinking water for the Spokane Metropolitan area, and concern for its protection is well justified among residents of the Spokane area.

The Cause and Effect Report prepared during the Spokane County 208 Study was based on 1 year of data collection from numerous wells and surface water locations as well as accumulation of existing data from other sources. The Cause and Effect Report documented the conclusions that:

1) Water percolates from the ground surface over the aquifer through the overlying alluvium to the ground waters. This water carries with it all pollutants accumulated at the ground surface and in subsurface deposits;

2) Aquifer water quality has degraded from its original condition and continues to be degraded as it flows beneath the Spokane Metropolitan area. This degradation was shown based on historical water quality variations directly associated with various land use over the aquifer;

3) The predominant degradation in aquifer water quality was shown to occur in areas of the highest density of urbanization. It was concluded from this that urbanization has a serious effect on water quality in the Spokane/Rathdrum Aquifer.

EAST 7905 HEROY AVENUE SPOKANE, WASHINGTON 99206/PHONE (509) 926-3049

4) A significant quantity of pollutants resulting from urbanization are derived from sanitary sewage disposal through onsite disposal systems.

Since the 208 Water Quality Monitoring Program was completed in 1978, it has been recommended that an on-going monitoring program be established. This on-going program has been conducted by the Spokane County Health District at several well sampling points during the 1980-81 year. This water quality monitoring was conducted by Health District personnel who transmitted the samples to the Washington Department of Social and Health Services Laboratory in Seattle for analysis. A number of wells selected for the monitoring by the Spokane County Health District are the same wells monitored by the Health District with analyses run by the DSHS in 1971 and 1972. In addition, several of the wells were sampled by the 208 program. Based on these specific comparable sampling notations, the following results were obtained:

1) Comparison between data from DSHS laboratory results on samples collected by the Spokane County Health District in the year 1971 - 1972 and in 1980 - 1981 showed ten wells, all owned by purveyors in the Spokane area, could be compared for nitrate-nitrogen and conductivity. All of the wells are in the area east of the Spokane city limits within the Spokane Valley area. A summary of the comparative mean concentrations over the year of sampling in each case, are attached in the memo from Mr. Stan Miller of the Spokane County Engineering Department Office. The data shows for these ten purveyor wells that the mean nitrate-nitrogen was higher in all wells in the 1980-1981 sampling period as compared to the 1971-1972 sampling period. Eight of the ten samples compared with a Students t test showed the 1980-1981 data to be higher at greater than an 80% significance level. Six of the ten showed it to be higher at the 90% significance level or greater. Of the comparative conductivity values nine of the ten wells showed a higher mean conductivity in 1980-1981 than in 1971-1972, with the remaining mean conductivity only 4% lower, well within the error possible from the test. Seven of the ten means were greater in the 1980-1981 sampling period than the 1971-1972 sampling period at more than an 80% significance level using the Students t test. Six of the ten were greater at more than 90% significance level.

2) Comparison of the 1980-1981 monitoring data with the 208 data showed that the nitrate-nitrogen in six of the eight wells was higher in 1980-1981 than only three years earlier. Four of the eight were greater in nitrogen concentration at more than 80% significance level.

During the 208 sampling program one well on the south periphery of the aquifer in the West Valley area (Edgecliff Well) was taken out of service due to the sampling program detecting bacteriological contamination higher than the drinking water standards. Within the past year the Millwood Hedman well has been taken out of service and the town of Millwood is in the process of constructing a new water supply well to replace it, which will penetrate the aquifer to a greater depth and hopefully avoid higher contamination levels near the aquifer surface. Each of the wells that have been taken out of service and documented to be contaminated with bacterial levels above drinking water standards are located where the aquifer surface is only 40-60 feet below the ground surface, and each of them apparently drew water from near the aquifer surface. However, it can be concluded that since these two wells and possibly others in the area have been taken out of service due to contamination of higher levels in the aquifer that it may be only a period of time before additional wells become contaminated if land use activities continue to evolve as they have to date and mitigating measures are not put into place. In addition, a well in Rathdrum, Idaho was recently closed by the Panhandle Health District due to nitrate levels occuring above the drinking water standard. This well was one which was shown to contain nitrate levels higher than surrounding areas but within the drinking water standards during an earlier Panhandle 208 Study (1975-1976) In the interim two housing developments have occured in the vicinity of the well. The City of Rathdrum has had to seek out a new water supply source.

I must concur with the EIS statement on pages 80-92 that No Action will result in a ground water quality which continues to decline and which will eventually pose a health threat to those drinking the water. I must also concur with the assesment that the proposed sewering effort would create a positive change in aquifer water quality.

During the past three or four years that I have worked with the 280 Citizen's Representative Corps committee (CRC) I have observed a group of citizens highly representative of all factions in the Spokane metropolitan community seriously consider the effects of activities on water quality in the Spokane Rathdrum aquifer. These citizens, after two years of intensive self education on water quality matters and after thorough review of the findings of the Cause and Effect Report and other monitoring programs, set forth several policy recommendations to be followed during the development of the Water Quality Management Plan for the Spokane Rathdrum Prairie aquifer:

1. They recommended that there be established a policy for no further degradations of ground water quality in the Spokane Rathdrum Prairie aquifer.

2. They recommended means of control of known and potential sources of pollution be installed at their source in order to preserve aquifer water quality.

3. For sanitary sewage controls they recommended;

    (a) collection of all sewage and treatment for its discharge so pollutants cannot enter the aquifer,

    (b) development of central sewer planning,

    (c) sewering of all areas that are urbanized.

4. For the Spokane Valley area they recommended;

   (a) central sewer planning for sanitary sewage,

   (b) that all interim industrial, commercial, and multi-family wastewater facilities be intercepted as soon as possible with a central sewer system,

   (c) that all new development provide sewers for connection to the central sewer system,

   (d) that a ban on all new and increased sewage discharges to the Spokane River upstream of the aquifer recharge area be established, and

   (e) that proposals be initiated on an area by area basis for sewering for existing urbanized areas which would then be responded to by home owners in the area.

On February 19, 1981, the CRC, after reviewing recommendations in the Comprehensive Wastewater Management Plan (CWMP) and after reviewing the Draft Environmental Impact Statement, resolved to confirm their conviction that drinking water quality should take the highest priority among alternatives considered, and recommended the alternative of sewering the aquifer sensitive area should be implemented in as timely a manner as possible.

After conducting the 208 monitoring program, preparing the Cause and Effect Report, reviewing subsequent data that has become available, and being a participant in the comprehensive wastewater management planning effort, I must concur with the recommendations of the 208 CRC committee and strongly urge that the CWMP be approved for implementation. I recognize that there may be a slight impact on receiving water quality down stream from the City of Spokane as a result of decisions for protecting the drinking water supply. However, I and I believe much of the Spokane Community, feel that protection of the drinking water supply is essential and protection of the surface water for recreation and other purposes, although highly desirable, must take a lower priority. I believe that water quality in the Spokane River and impoundments downriver from the City of Spokane will not be excessively jeopardized so as to restrict its use, but will still enjoy a much higher level of quality than was in place prior to construction of the Spokane Advanced Wastewater Treatment Plant. Fishing and other recreational uses, including body contact, in my opinion, would not be jeopardized if the CWMP is certified for implementation.

Thank you for the opportunity to present my verbal statement at the EIS hearing in Spokane on May 14, 1981 and to provide you with this written follow-up for your consideration.

Sincerely yours,

Larry A Esvelt

Larry A. Esvelt, Ph.D, P.E.

LAE/vssj

HISTORIC TRENDS IN DSHS DATA FOR 10 WELLS

Stan Miller
5-1-81

For approximately one year beginning in the Fall of 1971, the Spokane County Health District collected water samples on a monthly basis from 12 wells. A wide range of chemical analyses were performed on these samples at the Department of Social and Health Services laboratory in Seattle. Ten of these wells were sampled by the SCHD and tested by the DSHS quarterly during the Fall and Winter of 1980-1981. The exact details of sample collection, preservation and shipping or chemical analysis procedures used are not available. However, known differences in analysis and in data reporting procedures significantly reduce the number of chemical parameters which can be compared. Specific conductance and nitrate-nitrogen were chosen for comparison since the data is reported comparably, the test procedures produced consistent data and replications performed on samples during the 1971-1972 period indicate good laboratory precision.

Means for 1971-1972 and 1980-1981 data were compared using a t-statistic calculated for unpaired observations with equal variance. The mean concentration of nitrate-nitrogen in all ten wells increased between 1971-1972 and 1980-1981. One well, CID 2, showed a slight decrease in conductivity; the others indicated increases over the time interval. As indicated in Tables 1 and 2, increases significant at the 5% level for both nitrate-nitrogen and conductivity occurred in the WWP-2-4, Vera 4 and East Spokane 2 wells. The increase in conductivity observed in WWP-1-5A is also significant at the 5% level. The wells showing significant increases in dissolved materials were examined in an effort to explain the increases in dissolved materials. The Vera 4 well, in addition to several other wells, was noted as showing an historic increase in conductivity in the Spokane Aquifer Cause and Effect Report.

This and other water quality conditions observed were attributed mainly to urban development in that report. An examination of historic housing development revealed considerable growth in the period between 1971 and 1980 in the vicinity of the wells showing significant increases in both nitrate and conductivity. Two other wells, CID 11A and Modern 9, are also located in areas of housing development. Sizable (about 0.4 mg/1), though not statistically significant, increases in nitrate-nitrogen was noted in these two wells. Only small increases in conductivity occurred.

In general, since the wells for which comparison data is available are scattered throughout the aquifer area east of the city limits, it can be concluded that a measurable increase in the annual average dissolved salts concentration has occurred in the Valley portion of the aquifer in the past 10 years. At at least three locations, the increases are statistically significant at the 5% level. Only one well, CID 2 does not show a pronounced increase in at least one of the parameters examined. This well is located in an area known to be influenced by river flow, a factor which could account for the difference. The fact that the three wells showing the greatest change are located in areas subject to rapid residential growth suggests that conversion of land from agricultural to residential use can cause measurable aquifer degradation.

Comparison of 1977-78 208 & 1980 81 USGS data NO_3-N

14 May 81

	$\bar{x}$/s 77-78	$\bar{x}$/s 80-81	t	d.f	Significance level
WWP 2-4	3.81 0.53	4.25 0.64	1.04	10	0.16
WWP 1-5A	2.92 0.30	3.03 0.40	0.56	12	~0.25
VERA 4	2.78 0.20	3.37 1.27	1.68	13	0.14
MODERN 1	0.96 0.17	1.12 0.15	1.88	11	0.04
MODERN 9	2.52 0.14	2.37 0.51	-0.54	13	~0.50
ORCHARD 1	1.54 0.17	1.50 0.20	0.33	9	~0.50
E. SPO 2	4.49 0.51	4.97 0.21	1.44	13	0.09
CID 11A	1.08 0.24	1.27 0.21	1.06	5	0.17

TABLE 1
DSHS 1971-1972 vs. 1980-1981 Nitrate Data

	71-72 $\bar{x}$	80-81 x	t	d.f.	Significance Level
WWP 2-4	2.70	4.25	2.76	12	0.01
WWP 1-5A	2.42	3.03	1.42	12	0.09
WWP 1-5B	2.61	3.13	1.14	11	0.14
Vera 4	2.08	3.37	2.56	12	0.02
Modern 1	1.11	1.17	0.17	13	0.43
Modern 9	1.91	2.37	0.83	13	0.21
Orchard 1	1.24	1.50	1.38	13	0.10
East Spokane 2	3.64	4.97	2.36	10	0.02
CID 11A	0.87	1.27	1.41	12	0.09
CID 2A	0.90	1.05	0.39	11	0.35

TABLE 2
DSHS 1971-1972 vs. 1980-1981 Specifc Conductance

	71-72 $\bar{x}$	80-81 $\bar{x}$	t	d.f.	Significance Level
WWP 2-4	334	385	2.71	12	0.01
WWP 1-5A	311	337	1.79	13	0.05
WWP 1-5B	317	343	1.20	12	0.13
Vera 4	330	453	4.31	13	0.0004
Modern 1	267	283	0.73	13	0.24
Modern 9	285	287	0.07	13	0.47
Orchard 1	308	333	1.76	13	0.15
East Spokane 2	393	490	7.20	10	0.0001
CID 11A	240	257	1.58	12	0.17
CID 2A	167	160	-0.87	11	0.80

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February 25, 1981

Kathryn M. Davidson M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1206 Sixth Ave.
Seattle, WA 98101

Dear Miss Davidson:

I wish to acknowledge receipt of a copy of the draft Environmental Impact Statement (EIS) on the proposed Spokane County Wastewater Management Plan (CWMP).

Having served as a member of the citizens advisory committee on both the CWMP, Federal 201 Facility Plan and the Spokane Aquifer Water Quality Management Plan, Spokane County, Washington 208 program I have the advantage of a very close familiarity with both programs which in my opinion are intregal in their ultimate goals of protecting the Spokane-Rathdrum Aquifer from further inroads on the quality of the Spokane City and Counties sole source water supply.

This EIS covers, in depth, all of the aspects proposed by the 201 CWMP and in its detail explains the ramifications and results of the study upon all facets of man's living in close proximity to a vital resource.

1 I cannot agree that a "no action" philosophy, see page 5, can be considered as even a temporary solution to the promulgation of any type of action for the protection of a God given resource. Financial means MUST be found to insure that the proposals as outlined are not only accepted but that action is begun forwith to implement one of the several alternatives outlined in the EIS. Based on my association with the CWMP I endorse Alternative A as the more logical of the proposed solutions.

By actively persuing the methodology of wastewater disposal through a series of collection basis so as to preclude periodic overloading of the

City of Spokane's sewage treatment plant I am of the opinion that not only will money economies occur but that certain projects such as the Liberty Lake Treatment facility (page 16) now under construction could be eliminated and the funds allocated to accomplishing an overall program that will exceed the proposed 20 year life span anticipated for that plant.

2 Since the publication of this draft EIS the subject of influence on the quality of the Spokane River has become a matter of controversy as regards the disposition of the wastewater through the current methods, that is returning the refined effluent to the river. This subject was discussed at some length during several 208 Citizens Committee meetings in view of the interaction between the river and the Aquifer, see pages 82 and 98 and I am disappointed that the EIS fail to give this aspect more than a cursory glance most particulary in view of the "trend to poorer quality" as refferred to on page 84.

3 In conclusion I find an incongruity between the cost figure for Alternative A as noted in the EIS, page 123 and the figures proposed by the CWMP yet both figures are attributed to Economic and Engineering Service, Inc. To preclude future discussions on dollar amounts, especially when attempting to promote a financing program at the local City-County level I feel that the planned cost estimates should be brought into some conformity.

I endorse the EIS, accept as noted above, and strongly urge that activation of the proposed programs be undertaken as expeditiously as is comensurate with accepted policies and philosophies. We have just about worn this subject out with studies, NOW is the time to most energetically activate and pursue the programs for the ultimate benefit of all of the citizens of the Spokane City and County areas.

M. E. Hay

E. 1922 36th
Spokane, WA 99203

Response to Comments from M. E. Hay

1. EPA is not promoting a "no action" approach to the Spokane County wastewater treatment problem. Refer to Chapter 3 for EPA's recommended action.

2. The interaction between the Spokane River and the Spokane Valley Aquifer has not been well defined. Drost and Seitz (1978) and Esvelt (1978) provided the basis for interchange discussions in the Draft EIS. Their findings were reported at several points in the EIS. The water quality implications of this interchange are a primary reason for CWMP rejection of a Felts Field wastewater treatment plant and river discharge.

3. Project costs have been revised and updated several times in the last 6 months. Table 2-20, taken from the latest facilities plan summary, presents the latest revision of project costs.

May 14, 1981 - Presented to EPA Hearing in Spokane by JOAN HONICAN

As one who has spent an inordinate amount of my life on aquifer problems, I don't appreciate recent attempts to "fast-track" the 201 Plan after years of total neglect. Now, under the guise of "saving the aquifer" we are hearing the same people who have consistently opposed any special protection of our underground water supply rallying around the Phase I Interceptor System known as Alternative A in the DEIS. Have they really gotten religion or have they found a new way to con the public so they can continue business-as-usual and the obliteration of the entire recharge on the Washington side of the State line? Since environmental and cost effective considerations are uppermost in EPA's responsibilities under NEPA and as a reg. and funding agency, you must be aware of serious problems in Spokane and the interrelationships between the 208, 201, Comp Plan, Classification Map and the coming Underground Injection Control (UIC) program. The recent adoption of a Comp Land Use Plan by two lame duck county commissioners is still embroiled in litigation and extensive documentation is available if anyone is interested. Since the 201 admittedly follows the lead of the Comp Plan and the 208 it is apparent that if they are seriously defective so is the 201! To demonstrate the problems I have attached as Exhibit A the aquifer portion (which I authored) of a "Citizen's Report" which went to our Board of County Commissioners. I would be happy to answer any questions and to meet with those from EPA charged with the responsibility of developing an adequate EIS.

After reading the DEIS numerous questions and comments came to mind. I have attempted to summarize them as follows:

1 1) Due to expressly incomplete cost data and the implications of the DOE Wasteload Allocation Study an amended and recirculated EIS is certainly in order. Will this be done?

2 2) Without sufficient background data your mitigating measures are inadequate.

3 3) When dealing with Spokane County it is imperative that the most stringent mitigating measures must be CONDITIONED to avoid adverse environmental impacts.

4 4) Page 29 of the DEIS shows a map of our gerrymandered aquifer recharge boundaries. Three other sludge dumps are not even on the map and do you really believe it is just a coincidence that the two major landfills just happen to be outside the boundary? How does this square with EPA's Sole Source recharge map?

5 5) Why isn't the contribution of industry discharges (Pg. 42) known? Aren't they all on NPDES permits?

6 6) On pages 86, 87 and 88 you cite federal state and local regulations which you state, "...act to protect the Spokane Valley Aquifer...". I could do a book on each citation and its abuse in Spokane County. Since time doesn't allow, I am requesting a meeting in Spokane to discuss the true state of affairs in relation to these regulations so the author can revise the entire section to conform to reality. When can the meeting be arranged? (See Exhibit B)

7 7) With the recent adoption of a Classification Map encouraging the development of Spokane County, predominantly over the aquifer, we cannot discuss dealing with only one aspect of our increasingly serious pollution problem. How can we talk of picking up only sewage and ignoring urban runoff which was determined almost equally significant at today's density by the 208? With the new classification expressly encouraging 17 housing units per acre and heavy industry directly over the major portion of the aquifer I, for one, do not accept grassed percolation areas as the selected treatment method for the volumes of surface wastes such densities will produce. With our ground frozen or saturated much of the year we obviously have a serious underground injection problem to deal with.

8 8) According to page 142, EPA cannot subsidize sprawl. The statements from Spokane County's planning staff in its DEIS on the recently adopted Comp Plan says it all. The staff did an excellent job in analyzing the situation we are up against and the Community Press' Jim Wavada did a well informed analysis of how our so-called Land Use Plan evolved. (See Ex. C and D)

9 9) The 3 units per acre data on page 148 is invalid in light of Spokane's expressed intent to maximize development to help on the payback of the system. To support their position they adopted a hugely expanded definition of "fill-in development" in the Comp Plan which completely undermines the 208's definition of "fill-in" specifically confined to the Priority Sewer Service Area. In Chapter 10 of the Comp Plan they also inserted a waiver clause which will effectively undermine the intent of the 208's recommended 5 acre limitation on lots outside the PSSA.

10 10) Spokane County's recent response to Elizabeth Corbyn's comments on Monte Del Rey are representative of local, historical fun 'n games with the public health. Response #17 (See Exhibit E) clearly expresses the effect of the old Board of County Commissioner's action in "accepting" not "adopting" the 208 Plan.

11 11) Over $1 million was spent on suitability and capability data which is not reflected in the Comp Plan or Map. The use of such data would show very clearly where Spokane County should direct its growth.

12 12) An interstate committee must be formed to oversee the continued viability of the Rathdrum-Spokane Aquifer.

13 13) EPA's DEIS consistently states we are only using 20% of the aquifer. According to the 208 we may be using 50% of recoverable water. Everyone does seem to agree that the aquifer is a finite resource with development limitations. The critical question obviously---what are those limitations?

Please respond to:

Joan Honican
S. 3904 Bowdish Rd.
Spokane, WA. 99206
Phone: (509) 926-0172

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MAY 29 1981
ENVIRONMENTAL EVALUATION BRANCH

May 27, 1981

TO: EPA Region X, Lead Agency for Spokane's 201 Plan

FROM: Joan Honican-- S. 3904 Bowdish Rd. - Spokane, WA. 99206 J.21.

RE: Additional questions and comments for inclusion in the FEIS

14 Having attended an unresponsive public hearing (May 14, 1981) on Spokane's 201, I feel, more than ever, that EPA's DEIS is seriously deficient in numerous areas. Due to the fact that much significant new data impacting directly upon the 201 has recently become available, it is imperative an amended or revised EIS be recirculated so the public might have an opportunity to comment for publication in both the NEPA and SEPA final EIS's.

15 Since EPA is the lead agency and also an agency with expertise, we must have your assessment of the Supplemental Study, Volume II which was distributed at the public hearing before composing our own questions and comments. We really don't need another multi-million dollar, white elephant (like the Liberty Lake fiasco) at taxpayers' expense.

All of the following need to be thoroughly assessed in relation to the 201 and also to EPA's and DOE's responsibilities under the law---

16 1) The Spokane River Wasteload Allocation Study
17 2) Spokane County's adoption of a new Comprehensive Land Use Plan
3) Spokane County's adoption of a disastrous Classification Map
18 4) Spokane County's failure to adopt the 208 Plan
5) Refusal of the only agency (Dept. of Ecology) with statutory and jurisdictional authority to assume its responsibility for seeing that the 208 is implemented
19 6) Implications of EPA's coming Underground Injection Control (UIC) program and urban runoff problems mentioned on pages 148 and 149 of the DEIS
20 7) Acknowledgement that the aquifer is a finite resource with limitations but no data to determine same
8) Obliteration of clean recharge to a sole source aquifer and no assessment of huge quantity diversions of recharge or quality
21 9) Wholesale loss of prime agricultural lands underwritten and glaringly reflected in the Classification Map
22 10) Gross violations and loopholes in state laws which purport to protect "waters of the state" (Particularly WAC 248-96 and RCW's 90.48.110, 90.48.162 and 58.17)
23 11) Complete cost data including a realistic appraisal of federal and state funds available and the mechanism for providing sewering for those who genuinely can't afford the additional cost (Over 10% unemployed, thousands underemployed and a high elderly population on fixed incomes)
12) Alternative funding plans if bond issue and LID's fail
24 13) Assessment as to this 201's compliance with WAC 173-240 and RCW 36.94
25 14) How the city of Spokane intends to dispose of its stormwater after separation of its existing system
26 15) Gerrymandered aquifer recharge boundaries
27 16) Status of the congressionally approved Bureau of Reclamation scheme to irrigate the Rathdrum Prairie in Idaho (E. Greenacres Project).

I'm requesting the above sixteen items be addressed in a revised EIS. If, as I suspect, the final EIS's are "fasttracked" for both NEPA and SEPA then I will expect written responses in the FEIS to all of my expressed concerns including those presented at the public hearing May 14th.

In addition to the sixteen listed above, there are numerous other gaps and unanswered questions regarding the 201. They are as follows---

28 A. Knowing Spokane County has historically abdicated its responsibility to protect such a precious resource as the Spokane-Rathdrum Aquifer, does EPA intend to mandate mitigating measures? To do less is to commit us to accelerated degradation of our drinking water.

B. What does EPA recommend as mitigating measures for the dangerous and persistent urban runoff of Spokane County's projected growth directly over the aquifer? Who ruled out stormwater sewering as too expensive in this precarious area?

29 C. DEIS Page 20 - How do you intend to monitor equalizing basins for leaks? And, will there be any pre-treatment and how will settling solids be handled?

30 D. Page 35 - It's interesting to note that the county now appears to have found suitable fill for the gravel pits proposed to be used for equalizing basins. During the 208 study period we were continually told it would take decades to find such material. What specifically is proposed to be used in these extremely permeable areas?

31 E. Page 59 - Who and what is the Defense Plant Corp and how much of its 44 cfs does it presently use and what is it used for?

32 F. Page 66 - How much power is generated at 9 Mile and Long Lake dams?

33 G. Page 85 - You state the USGS has developed a model to be used in forecasting long-range changes in groundwater quality. It was my understanding the model was not developed even though contracted under the 201. Please send me specifics on this and the name of a contact person in USGS responsible for the model? Would such a model include West Plains even though our 208 didn't?

34 H. Is EPA aware of the Bureau of Reclamation project mentioned in #16 above and its implications for Spokane?

35 I. Page 105 - In light of EPA's responsibility stated in the last para. how can half a project (ignoring urban runoff) be approved?

36 J. Page 106 - Please send a list of those industries, in Spokane County, which have registered with EPA as required under RCRA. Also send a copy of the document referred to in paragraph 2.

37 K. Page 120 - The 3rd para states, "...a combination of financing mechanisms ... are still being worked out by the facilities planners". On page 126 you also state residents must also pay to tie into the collection system from their houses. Has a cost estimate been worked out on replumbing of most homes since septic tanks are usually in the backyard?

38 L. What is EPA's position on overclassifying enough land for 40 to 50 years, mainly over the aquifer?

39 M. Has EPA reviewed Chapter 10 of the new Comp Plan? If yes, what are your comments and please send me copies, requested under the Federal Freedom of Information Act, of all communications with Spokane County regarding its new Land Use Plan and Classification Map.

40 N. Since the Priority Sewer Service Area (PSSA) was too large in the 208 how does the 201 justify enlarging it still further? And, has EPA done a comparison of "fill-in policy" definitions in the 208 and the Comp Plan?

41 O. Since the PSSA, unless revised, is gigantic, phasing is mandatory as sewers become available. Will EPA require phasing and also the 5 acre

41 minimum lot size (with no Chapter 10 waiver) in the General Sewer Service Area (GSSA)?

42 P. Page 148 - In light of the Classification Map, projected density, the "fill-in policy" and maximizing payback, does EPA accept the 3 unit per acre formula for estimating urban runoff waste loads? Inflate development to the maximum and refigure. Page 149 - The Land Use Plan doesn't "anticipate" further industrialization in the central portion of Spokane Valley. It expressly encourages, classifies and leaves no other alternatives since West Plains isn't viable without utilities.

43 Q. Page 159 - In the last paragraph you again use the 20% figure for aquifer water currently utilized. The 208 stated we may be using 50%. How do you intend to deal with this significant difference?

44 R. What are EPA's mitigating measures for sludge dumps and chemical dumps in the EPA designated recharge areas?

45 S. Have agencies considered the feasibility of generation of electricity by the City's and Liberty Lake's outfalls and storage of methane on site rather than burning it off in summer?

46 T. Why does Alternative F consider only disposal in Stevens County when the Spokane County Parks Dept. is putting together a proposal for an off-road vehicle area (200 acres) in West Plains? Spokane County has its own options available and "F" always considers moving the entire discharge to land disposal rather than retaining the city's present 31 mgd to the river. Why are we continually given polarized options rather than the more sensible variations between?

47 U. Recognizing the urban density already living between the city limits and Sullivan Road dual sewering for sewage and stormwater would appear to be a minimal requirement to protect the public health and such sewering should demand the highest priority from all of us in an attempt to rectify serious past actions or inactions. Where I part company with the proposed Valley portion of the plan is in that area from Sullivan Road east to the Idaho state line. We allowed the approval of Homestead, Highlands and Hewlett-Packard, a classic example of spot zoning, in a terribly environmentally sensitive area. And, they grabbed the Liberty Lake 1 mgd sewage system, originally intended for lake property, like so many leeches. As a result of the lack of planning and Hewlett-Packard's propensity for scenic view lots (regardless of environmental consequences) we are face with an undersized $6/gallon treatment plant and hysteria over H-P's plans for expansion which are forging ahead. Recognizing the inevitability of this situation, we should use the abandoned railroad right-of-way but the interceptors should be scaled down considerably and a moratorium instituted on additional development over the major recharge area. To approve an interceptor to support the Classification Map densities and uses is to abdicate totally Washington State's and Spokane County's responsibilities to protect what's left of our recharge. We cannot continue to congratulate Idaho on its steps to protect "our" aquifer or to pat them on the back by telling them how great it is that we aren't upstream. (Electricity just went off) Perhaps my anger at sitting by helplessly watching one of the best drinking water supplies deteriorate blew out a fuse panel. Does anyone intend to consider a rational plan or is the rubber stamp on "more of the same" a foregone conclusion? How can we commit to saturation development while telling Idaho they can't do the same?

posal practices discussed by state, county

okane Valley woman
in writing to the State
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laint by Joan Honican
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ing regularity," Gary
Plews of the State Department of Social and Health Services wrote in a letter dated April 9.

"Ms. Honican also suggested in her letter that various water quality violations are occurring and have been caused by actions or inactions on the part of the Spokane County Health Department," Plews wrote.

But Dr. Mary Luther, county health officer, said she believes the disagreement is "probably based on professional differences" and not willful violations of state laws.

Of the dispute, she said, "I think that it's in the process of resolution."

A recent meeting to discuss the matter was "very productive," Dr. Luther said. "All of the concerns expressed by Mrs. Honican were considered and, in anticipation of new state and local on-site sewage disposal regulations, the problems identified are being resolved." A follow-up session is planned.

Dr. Luther also said she was unaware of any "identifiable health hazard" as a result of the practices allowed here.

Edward M. Pickett, environmental health director for the Health District, said county regulations approved by the state in 1976 permit impervious surfaces to be placed over drainfields under certain conditions.

Pickett said it's done "all the time" in Spokane County, but is authorized by local regulations.

"There doesn't appear to be anything that's bad about blacktop" over drainfields, he said. In fact, said Pickett, there may be some benefits, including additional protection for the drainfield from the asphalt above.

He said the loading rates issue also is a matter of interpretation.

The U.S. Public Health Service guidelines are based on the assumption that there are two occupants per bedroom in each dwelling, Pickett said. But more current information indicates that formula overstates actual occupancy rates, he said.

Pickett said Spokane's situation is unusual because in other Washington counties there either are sewer systems to handle sanitary wastes or wide expanses for drainfields. Here, a large portion of the urbanized area is unsewered, but space is at a premium, he said.

The Health District is preparing new on-site sewage disposal regulations which will address the various practices at issue, Pickett said. The state will have an opportunity to review those regulations once local action is completed, he said.

Mrs. Honican called for an investigation of local sewage disposal practices last November after county commissioners approved the rezone application for the mobile home park.

At the time, she said well water in the area, which is near an old waste disposal site, already was below federal drinking water standards.

Response to Comments from Joan Honican

1. This Final EIS is being recirculated for public review and comment. It contains revised cost data and additional water quality analysis in Chapter 2. All comments on the Final EIS received prior to the close of the comment period will be considered in EPA's decision on funding of the CWMP.

2. The mitigation measures EPA feels are necessary for approval of Phase I of the CWMP are contained in Chapter 3. EPA feels these measures are adequate to mitigate the significant impacts of the proposed project.

3. The mitigation measures that are to be made conditions of the EPA grant award are listed in Chapter 3.

4. The Mica and Northwest landfills are within the EPA-designated aquifer drainage area mapped by the U. S. Geological Survey (Drost and Seitz 1978). The Colbert landfill is not within the aquifer drainage area. Only the Northwest landfill is within the EPA-designated aquifer recharge area. EPA's "sole source" designation applies to both the recharge and drainage areas.

The aquifer sensitive area has been identified by Spokane County through the 208 program. The northern portion of the Mica landfill is reportedly within the sensitive area. For this reason Spokane County is now monitoring groundwater in the vicinity of the landfill and is controlling surface runoff from the site (Card pers. comm.).

5. The paragraph at the bottom of page 42 discusses nutrient inputs to the river. This includes phosphorus and nitrogen compounds. The industrial waste dischargers do have NPDES permits, but they are not required to routinely monitor for nutrients (except orthophosphorus) in their effluent. Therefore, DOE has limited information on industrial nutrient inputs to the river.

6. The laws and regulations contained on pages 86-88 of the Draft EIS are all capable of aiding efforts to protect the aquifer. EPA has previously held a number of meetings with state and local officials and with the public on those programs for which we have jurisdiction. State and local regulations must be implemented by the appropriate agency or agencies.

7. Point and nonpoint sources of water pollution are addressed by two separate sections of the Clean Water Act (201 and 208). The differences in focus between these two sections are described in Chapter 2. (Relationship between

the CWMP and the 208 Water Quality Management Plan.) The CWMP is attempting to remedy the sanitary sewage threat to the aquifer. Urban runoff control strategies are addressed by the 208 plan. A letter from Mr. Ray Card, the 208 plan manager, is contained in this chapter. It describes the reasoning behind progress toward sanitary waste control rather than urban runoff control at this time. EPA, however, encourages immediate action toward implementing the urban runoff control measures recommended in the 208 plan.

8. Comment noted.

9. The 3-unit-per-acre figure listed on page 148 is an average figure for the entire GSSA. This includes some areas that will be developed to densities of up to 17 units per acre and others that will remain undeveloped. Therefore, the "per acre" loading criteria for calculating the content of urban runoff are to be used only in estimating runoff from the entire area. It would not be representative of densely developed urban areas.

10. Comment noted.

11. Comment noted.

12. While no interstate committee has been formed to oversee aquifer protection, the EPA has coordinated both states' efforts to protect the aquifer through its funding of 208 and 201 projects. EPA supports and encourages the concept of an interstate committee to oversee aquifer protection.

13. The 208 plan (Spokane County Office of County Engineer, 1979) states that the U. S. Geological Survey has been working on an aquifer flow and quality model. Preliminary work on the model has suggested that flow in the aquifer may be about one-half of that described by Drost and Seitz (1978). If this preliminary data proves to be accurate, the water withdrawals may approach 50 percent of the flow recorded at the state line. However, work on the model has not yet been completed.

14. EPA feels that the presentation of added facilities plan information at the EIS public hearing in May 1981 and republication of much of that information in this Final EIS allows adequate public review. The material presented simply allows for refinement of an alternative (A) evaluated in detail in the Draft EIS. Persons wishing to comment further on these suboptions may do so by submitting written comments on the Final EIS to EPA in Seattle within the designated comment period.

15. An analysis of the supplemental facilities plan information is presented in Chapter 1. The water quality implications are discussed in Chapter 2.

16. The implications of the Spokane River waste allocation study are discussed in the revised water quality analysis, Chapter 2.

17. Refer to the discussion of CWMP-land use plan relationships in Chapter 2.

18. Refer to discussion of CWMP-208 plan relationship in Chapter 2. Also, see EPA's recommended action in Chapter 3.

19. The relationship between the Underground Injection Control (UIC) program and Spokane's urban runoff control efforts must be addressed by the DOE as they pursue primacy for the UIC program and through ongoing efforts of the county 208 program. The implications of UIC should be reflected in the county's implementation of urban runoff control strategies.

20. EPA acknowledges that the Spokane Valley Aquifer is a finite resource. Implementation of CWMP and 208 plan recommendations will serve to protect that resource. In the interim, the U. S. Geological Survey efforts to better define the limits of the resource should continue. When their modeling is complete, it should be possible to more clearly define the effects of urbanization on the aquifer.

21. To the extent possible, EPA encourages preservation of prime agricultural land. EPA has included a recommendation to that effect in the list of mitigation measures contained in Chapter 3.

22. Comment noted. EPA is not responsible for monitoring compliance with Washington state codes.

23. Refer to the Project Economics section of Chapter 2. Spokane County must consider the ability to pay when developing a specific revenue plan for Phase I of the CWMP.

24. The Washington DOE is responsible for judging the CWMP's compliance with both WAC 173-240 and RCW 36.94. EPA must ensure that the CWMP fulfills the environmental analysis requirements of the wastewater facilities preparation guidelines established under the Clean Water Act.

25. Present plans are to discharge storm runoff to the Spokane River.

26. The aquifer recharge boundaries were set by the U. S. Geological Survey at the outside perimeter of the aquifer itself. The aquifer sensitive area boundary, established by the county's 208 study, was set roughly at the top of the first ridgeline upslope from the aquifer. This is slightly larger than the recharge area, but smaller than the entire drainage area in order to make the 208 land use restrictions feasible.

27. The East Greenacres project has been in operation for the last 5 years. Water is extracted from wells in the Post Falls area and used for agricultural and domestic water supply. In 1980, the project serviced 3,113 irrigated acres of cropland and provided domestic water for a population of 1,120. There are currently no plans by the U. S. Bureau of Reclamation to expand the project (Pearson pers. comm.).

28. EPA's required grant conditions are listed in Chapter 3. The means of solving urban runoff problems in the study area must be developed by Spokane County through its 208 planning efforts. The 208 plan report has recommended percolation of urban runoff through grassed areas rather than construction of stormwater sewers. See the May 28, 1981 letter from Mr. Ray Card, 208 Program Manager, on page 160.

29. The county intends to monitor the equalization basins for leaks by monitoring adjacent wells (Maxwell pers. comm.). There is no pretreatment planned for waters held in the equalization basins. The means of solids disposal has not been determined. Settled material may simply be washed back into the interceptor or it may be given to the commercial composting company that will be handling sludge from the city's treatment plant.

30. The latest information from the facilities plan engineers is that the storage basins will be excavated from land adjacent to the existing gravel pits rather than be constructed by filling in the pits. This will avoid the need for fill material (Maxwell pers. comm.).

31. Although its water right is still in the state records, the Defense Plant Corporation is no longer in existence. Its water right to 44 cfs was obtained by Kaiser when it purchased the Trentwood aluminum plant. The right is now used by Kaiser to extract cooling water from the Spokane River.

32. Nine Mile Falls generates electricity at a maximum hourly rate of 18 megawatts during high river flows; Long Lake Dam generates at a maximum rate of 72 megawatts (Washington Water Power pers. comm.).

33. You are correct in stating that the USGS model has not been completed. For further information on its status contact the Deputy Director of the U. S. Geological Survey, Tacoma, Washington office.

34. Yes, EPA is aware of the Water and Power Resources Service East Greenacres project and its implications.

35. The CWMP is designed to alleviate a wastewater disposal problem that is affecting aquifer water quality. The urban runoff control measures that are needed to protect the aquifer from growth in the area are being formulated through the county's 208 program. EPA strongly recommends that the 208 plan runoff control strategies be implemented to ensure aquifer protection.

36. This information has been forwarded as requested.

37. The facilities plan engineers estimate that connection of houses to the street collector system will cost homeowners from $300-$1,300 (Maxwell pers. comm.). The cost will vary with local topography, current plumbing design, the location of the house in relation to the street, and other factors.

38. EPA generally does not provide funding for facilities with a capacity in excess of 20 years of anticipated growth. The planning time frame for local land use plans is not subject to EPA approval. As stated in the Draft EIS, it appears that the county's land use plan allows for growth beyond that which is projected by the 208 planning effort and state-EPA aproved facilities planning projections.

39. EPA's comments on the county's comprehensive land use plan were published in the county's Final EIS on that plan. A copy has been forwarded as requested. EPA has not made separate comments on Chapter 10.

40. The "fill in" policies of the two plans have been compared. The broader definition in the comprehensive land use plan could apply to lands outside of the PSSA.

41. Project phasing is being planned by the county (refer to the Phasing section of Chapter 1). Additionally, only the local government can impose the 5-acre minimum land use control referred to.

42. The three-unit-per-acre formula for estimating runoff waste loads is only acceptable for estimating overall average loading (development densities from less than 1 unit per acre to over 17 units per acre). Different criteria would have to be used for analyzing runoff from the denser development allowed by the comprehensive land use plan. The urban runoff potential of specific developments should be assessed using adjusted criteria when the specific developments are proposed.

43. Refer to Response Number 13.

44. Sludge disposal facilities are regulated by DOE or the county health department, unless the facility were to accept sludge determined to be hazardous, in which case the facility would have to comply with federal regulations regarding new hazardous waste land disposal facilities (40 CFR Part 267). These regulations require that an impervious liner be installed to prevent the infiltration of leachate. In addition, the regulations require that an acceptable leachate and runoff control system be included in the facility.

45. There is insufficient head to generate a significant amount of electricity at the two outfalls. Suboption A-2 in Chapter 1 considers power generation by the pump-storage method. According to the facilities plan engineers, there is not sufficient need for methane in the summer months to make it cost-effective to use or store all that is generated (Maxwell pers. comm.).

46. Refer to Chapter 1 for a discussion of suboptions that include seasonal land application in the West Plains area.

47. The CWMP is not being prepared as a land use planning or growth control mechanism. It is intended to provide wastewater service to the pattern of development being planned by the local jurisdiction.

MICHAEL A. KENNEDY CONSULTING ENGINEERS

Michael A. Kennedy P.E.
David R. Welker P.E.
John W. Gundlach P.E.
Ralph R. Walker P.E.

May 21, 1981

Ms. Kathryn Davidson, M/S 443
U. S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

RECEIVED
MAY 26 1981
ENVIRONMENTAL EVALUATION
BRANCH

Re: DRAFT EIS for Spokane County Comprehensive Wastewater Management Plan (CWMP-EIS)

Dear Ms. Davidson:

Our firm provided technical review of the CWMP-EIS for Liberty Lake Sewer District. This letter will reiterate the major points which we presented orally at the May 14th public hearing.

We do presently and have in the past strongly supported the overall concept of sewering the aquifer-sensitive areas.

We carefully reviewed the CWMP and have several concerns. They are discussed in detail in the Liberty Lake Sewer District formal written response which has already been submitted. Our four major concerns are discussed below:

1. We feel that the present condition of the Spokane River is not adequately described in the EIS, especially with respect to toxicants such as ammonia and chlorine and how these affect the River fishery. A brief review of water quality at Riverside State Park, downstream of the present Spokane treatment facility, suggests that the River is not presently meeting designated Class A stream water quality standards.

2. We feel that the EIS water quality and fishery impact assessment procedures are generally unconservative.

   In most of the water quality predictions, the mean River flow (7570 c.f.s.) is used in wastewater dilution calculations. Typically, river flows in the critical summer and fall seasons are near 1000 c.f.s. for extended periods of time. The impact of the wastewater discharge should be assessed during a time-weighted average flow or a typical summer flow to more accurately depict "average" water quality conditions. The acute effects of toxicants should as well be assessed using dilution calculations at very low River flows.

   The effects on relatively non-mobile organisms such as stream insects should be assessed in the zone of dilution during typical flows and low flows.

1 Our preliminary calculations show that effluent dilution, un-ionized ammonia, chlorine residual, algal nutrients, and several toxicant concentrations would not be in compliance with water quality standards in the River downstream of the proposed Regional Wastewater Treatment Facility.

Because of the method of water quality assessment used in the EIS, we feel that it does not contain information necessary and sufficient to predict floral, faunal and recreation impacts resulting from the proposal.

2 3. We feel that the Land Application Alternates presented in the EIS do not exhaust the possibilities reasonably available. For example, no consideration is given to any options employing summer land application and winter discharge to the River.

3 4. We feel that neither the EIS, nor the Comprehensive Wastewater Management Plan itself adequately addresses the problem of stormwater runoff. The findings of the '208' study demonstrate the groundwater quality and public health risk of continuing present stormwater management practices in the aquifer-sensitive area. There is abundant literature demonstrating the adverse impact of stormwater runoff on both surface water and groundwater. Contaminants in stormwater include oxygen-demanding material, suspended solids, pathogens, algal nutrients, toxic heavy metals and exotic organic toxicants. We feel that the Plan should do more than simply establish administrative and managerial structures to deal with the stormwater management problem. This problem is not only a serious present concern but will become a crucial one in the future.

Thank you very much for the opportunity to comment on the County Comprehensive Wastewater Management Plan EIS.

Sincerely,

MICHAEL A. KENNEDY CONSULTING ENGINEERS

Philip R. Kaufmann

Philip R. Kaufmann
Environmental Specialist

PRK:jh

Response to Comments from Michael A. Kennedy Consulting Engineers

1. Refer to the revised water quality analysis contained in Chapter 2.

2. Refer to the discussion of Suboption A-2 contained in Chapter 1. A summer land application suboption was recently developed by the project engineers.

3. EPA agrees that stormwater runoff is an important water quality issue in the Spokane area. We feel, however, that the 208 planning process is the appropriate vehicle to address this issue. Please refer to the discussion of 208-CWMP relationships in Chapter 2 for additional comments.

May 15, 1980

Ms. Kathryn Davidson
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Re: DRAFT EIS for Spokane County Comprehensive Wastewater Management Plan

Dear Ms. Davidson:

1 It seems Long Lake is the scapegoat for everyone elses ells. It has been used for years by the city of Spokane as its final dumping ground for sewage and is still used for the strom water runoff. Liberty Lake is solving its lake problems but adding the Long Lakes. Now we have an either/or situation where officials seem to be saying we must protect our drinking water and ignore surface water problems. In fact, surface water problems will be actually deteriorating even further.

Those of us living on or near Long Lake also have the right to a healthy environment. R.C.W. 43.210.020 (3) expressly provides that each person enjoys a "fundamental and inalienable right to a healthful environment." The fact that particular environmental interests are shared by the few rather that the many does not make them less deserving.

I feel that the protection of the Spokane River and Long Lake is or should be the concern of everyone and just as important as the aquifer problem. With todays inflation, more people are staying home to enjoy their leisure and vacation time. Where better to do this than on the Spokane River land Long Lake. If these areas are allowed to deteriorate even more, the day will come when we face massive clean-up costs.

Perhaps the no-action plan is best for now. Don't allow the growth of Spokane County until the health of everyone can by protected.

Marianne Phillips

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Response to Comments from Marianne Phillips

1. Neither DOE nor EPA intend to allow protection of the Spokane Valley Aquifer to proceed at the expense of Long Lake water quality. In order to rectify an existing health threat in the form of on-site waste disposal over the aquifer, EPA and DOE are supporting plans to begin sewering of the areas using on-site systems. Simultaneously, the city and county must increase their water quality data collection and surveillance efforts to better define the impact of the Spokane STP discharge on water quality in the Spokane River and Long Lake. If the monitoring indicates that increased discharges of waste to the river are causing a significant adverse impact on the beneficial uses of the receiving waters, alternative methods of treatment and disposal will have to be implemented. The CWMP includes proposed alternatives if monitoring data indicate that adverse impacts to Long Lake are occurring.

West 817 Crestview Road
Route 1
Spokane, WA 99204

May 21, 1981

RECEIVED
MAY 26 1981
ENVIRONMENTAL EVALUATION BRANCH

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Subject: DEIS on Spokane County Comprehensive Waste Management Plan.

Dear Ms. Davidson:

1 As a consulting engineer in the Spokane area, I read with great interest and anticipation the DEIS on the Spokane County Comprehensive Waste Management Plan. To date I have prepared, or should I more properly say attempted to prepare, two ground water impact evaluations for projects overlying the Spokane Aquifer. At least one of these attempts (for which I might point out was done without any formal guidelines promulgated by the EPA) met with severe criticism from the water staff at EPA because I failed to present enough data in support of the projected ground water impact (Summerfield East GWIE). Ultimately, the EPA indicated that the background nitrate level in the aquifer at the project location was such that the EPA could not support any type of substantial discharging facility. I am not complaining about EPA's actions on that particular project so much as my concern that the EPA has now had drafted for it an EIS without any substantial material in it on the projected ground water impact from sewering a significant portion of the aquifer surface.

As stated on page 80 of the DEIS, "(t)he effect of the proposed Spokane County CWMP on the Spokane Valley Aquifer . . . is one of the major environmental issues of this project." However, on page 102 the DEIS continues by stating that "(a)s noted throughout the preceding pages, it is difficult to quantify the groundwater impacts of any of these options." The impact on ground water is then discussed in general, subjective terms. I am greatly disappointed in the manner in which the EPA itself has approached doing a ground water impact evaluation for a project anticipated to cost the public taxpayer tens of millions of dollars. There appears to be a great disparity between what the EPA expects consulting engineers to prepare for it for 90 lot subdivisions in comparison to what the EPA expects from itself for a vastly larger and much more significant project.

2 When the secondary impacts from providing a sanitary sewer system is fully evaluated, I am sure that there will be agreement that only one source of pollutants to the aquifer is being addressed. It is true that individual, and small domestic, waste treatment

2 and disposal systems represent a significant contribution of nitrates to the aquifer. However, is the nitrate problem the only problem of pollution that needs to be corrected? The answer is obviously an emphatic NO! On page 149, the DEIS states very succinctly that "(t)he CWMP deals only with the sanitary waste problem. It does not include recommendations for urban runoff control." The DEIS depends on the 208 plan to mitigate the potential impact from urban runoff and really discusses this source, and industrial spills, very minimally. Even though runoff might contain substantially less nitrate, phosphorus, BOD, TSS and fecal coliform organisms than the discharge from sewage disposal facilities, runoff contains other constituents of perhaps much more significance than sewage. Such pollutants include oil, heavy metals, pesticides, bacteria from animals, deicing compounds including chlorides, and hazardous materials spilled on the ground or washed into drywells.

3 I realize that installing a sewer system will correct the major source of nitrates. However, in my view, the availability of a sewer system will lift a burden from the county's conscience of approving substantial growth in the areas sewered and justify such growth on the basis of: (1) need to offset the cost of the sewers by additional users; (2) with excess capacity built in to the sewers, there is no need to limit growth; (3) sewers have corrected the problem of pollution; and (4) the 208 plan can correct all the other problems. However, with growth comes other problems of urban development; in particular, urban runoff and increased hazards from industrial and transportation related spills. To place such a burden of protection on the 208 plan recommendations is great indeed because if these measures do not work, or are not fully implemented, then the public has just invested a great deal of money into a sewer system that perhaps has corrected one source of pollution but has allowed and promoted the pollution of the aquifer from other sources that the sewer system itself induced. The DEIS conveniently brushes these concerns aside by stating simply that the 208 program will do the job.

My concern is that in the past there have been material spilled onto the surface of the ground that the 208 program might not have prevented even if it were fully operational. This material found its way, sometimes very quickly, into the aquifer and once therein, I feel became impossible, or extremely impracticable, to remove. Specific instances include approximately 20,000 gallons of diesel fuel spilled at the Milwaukee Railroad shop in the Valley, phenol at the Spokane Industrial Park, chlorides at KACC-Trentwood, cyanides at KACC-Mead and TCE found in various wells in the Spokane area. The course overburden which forms the Spokane Valley is highly susceptible to the transmission of pollutants to the aquifer -- no matter what the source is.

4 EPA places much emphasis on the 208 stormwater runoff management scheme. This plan uses the concept of grassed percolation areas (GPA's) for the treatment of urban runoff. In my second ground water impact evaluation (for the Sullivan Park Center Shopping Mall), I questionned the long term performance of such GPA's which continually receive oil and heavy metals. These GPA's are being required as a panacea with noone paying any attention to the need for monitoring their performance over the years. Since the DEIS places such a burden on the reliable performance of these systems to offset the secondary impacts from the construction of a sewer system and anticipated growth induced therefrom, the DEIS should evaluate critically the anticipated benefits and shortcomings of the 208 program. What has happened is that the 208 plan has recommended mitigating measures and then proclaimed these measures as being adequate to protect the aquifer from runoff and spills -- rather a self-serving analysis in my opinion. Now EPA comes along and prepares an EIS on a massive sewer system which greatly depends on the 208 plan to effectively work without any further analysis. It is the full integration and effectiveness of _all_ control measures that is required and essential for the protection of the aquifer.

What I am questionning is the wisdom of a massive investment of public funds to correct _a_ source of nitrates to the aquifer when such an investment may directly contribute to the pollution of the aquifer from other sources which it very likely will induce. Correcting the nitrate, or should I more properly say the sanitary sewage disposal, problem by sewering the Valley will also result in a possibly significant impact on the Spokane River system as indicated in the DEIS. Are we really _solving_ the problem or are we simply taking an irrevocable step towards creating a bigger and more costly problem in the future?

My specific questions and comments on the DEIS contents follows:

5 1. It always appears that all the discharge from municipal and industrial dischargers in Idaho mysteriously disappears as soon as the state line is crossed. EPA has authority in Idaho that the Washington DOE and Spokane County do not possess. Very little is mentioned about these dischargers and the fact that they _all_ discharge to the river system above all points in the Spokane River that discharge to the aquifer. Why then is the Liberty Lake STP always pointed to as the culprit in upstream pollution. What benefit is gained from intercepting Liberty Lake when all Idaho dischargers continue to dump into the Spokane River? As mentioned in the DEIS, there are plans to dispose municipal wastewater onto land during the summertime from Coeur d'Alene and Post Falls. If we are expected to pay for a sewer system in the Valley, the DEIS should indicate what problems we can anticipate

5 to be background created by sewer induced development in Idaho and different methods of sewage and industrial waste disposal totally upstream from the Washington portion of the aquifer.

6 2. What are the results of the USGS study on the aquifer and the computer models developed to simulate pollution from surface sources? Why are the results from other studies such as the USGS absent from this DEIS? I really don't care that the problem is that the USGS is a different agency from the EPA -- you are all financed by public taxes and we have an absolute right to the best and latest information available before we are required to vote on funding a massive sewering program. I would think that information developed by the USGS would be a critical inclusion in assessing the true ground water impact from the proposed sewer system. If the statement on page 80 of the DEIS (mentioned previously) is a true feeling of the EPA, then the omission of such studies is a glaring error. If that information is not yet available, then is the publication of the DEIS and the potential decision to approve government funding of this project premature? In short, what are the results of the USGS study on aquifer pollution?

7 3. The use of storage ponds during wet weather flows appears to almost sanction continued indefinite combined sewer overflows from the City of Spokane. One of the primary reasons, albeit politically induced, to embark on a sewer separation program was to give additional capacity for regional service. Combined overflows is a major source of raw sewage to the Spokane River even during the summer months (contrary to the indication on page 44 of the DEIS) from rainfalls exceeding .03 inches or whatever is necessary to create surface runoff. Any proposal that would be counterproductive to eliminating this source of raw sewage should be rejected as being totally inconsistent with the goals and objectives of the state and federal water pollution control laws.

8 4. If however storage basins are approved, it is indicated that an ideal location would be at existing gravel pit sites which presently penetrate the aquifer. The DEIS mentions that backfill would be required but no mention of the quantity or sources of such fill material is made in the DEIS. This is a most critical oversight since a crash program to backfill these pits could create a substantial health hazard. The quantity required to backfill is essential to know and possible sources of fill need to be identified to evaluate the feasibility of the use of gravel pits as storage basins.

9 5. It is mentioned that the storage basins would be sealed. For an area the size that needs to be sealed, it would be extremely difficult, if not impossible, to prevent leaks from the basin into the aquifer. This impact was completely left out of the DEIS. Why? Even if the answer is difficult, is it not the function of an EIS to explore such problem areas and to discuss impacts, even if only speculative? Will soil moisture monitoring beneath such basins be required and what will then happen if leaks are detected?

10 6. I question the inference that the Spokane STP was originally approved as a total regional treatment facility. The original BOVAY report, as well as the ESVELT report of the early 1970's, both indicated that the north Spokane and Spokane Valley areas were not intended to be served by the city plant. It was not until certain political decisions were made regarding funding for the combined sewer overflow program that the concept of a regional treatment facility came to be. The original plan was for the city to serve the Moran-Glenrose prairie area, the Geiger Field area and future city growth. Since the decision was made to assist the financing of sewer separation on the basis that this would be the most cost-effective regional treatment program (to eliminate treatment facilities for the Valley and North Spokane areas), how does the EPA now rationalize the construction of storage basins that appear to take the pressure off from the separation program?

11 7. Dr. Todd's report for the SPRIBCO study indicated that he believed there was a layering of pollutants on the surface of the aquifer. The 208 study followed up on this concept and apparently verified this phenomenon. Most of the wells of major public service are relatively shallow (eg., the City of Spokane wells adjacent to the river). Since the aquifer in some areas is several hundred feet deep and it is highly transmissive, why is the concept of drilling deep wells and constructing a water supply system from these sources not considered as an alternative with the 'do nothing' alternative? I realize that this suggestion does not sit too well with the goals of the water pollution control laws, but how does it square with water supply objectives? Can we really expect to protect the aquifer from all sources of pollution or should we instead implement growth controls, 208 recommendations and depend on a 'protected' deep water supply source in an area of the aquifer that possibly can be protected and construct a water distribution system rather than invest in a costly sewer system that may not protect the aquifer at all. I think we have to be completely honest in evaluating the goal of this program -- to insure a safe supply of drinking water for the future. To reach this goal, why can we not have a realistic approach to pollution control and

11 water supply. Why must we forever work with blinders on to hinder the true objectives. Just because the FWPCA allows the federal funding of sewers and treatment facilities, must sewers be the only alternative evaluated in an EIS if they are not going to solve the real problem of aquifer protection? Is a deep well in a protected area a feasible and viable alternative to installing costly sewers? Again, look at and evaluate the objectives of all of the regulatory programs and assess the realistic affect of installing a sewer system and the effect of all sources of pollution on the aquifer.

12 8. What percent of waters applied from all sources to the surface of the aquifer will be intercepted by the sewer system? Even though these other waters are not from sanitary sewage, they do and will continue to carry other significant pollutants to the aquifer. The one aspect of the 208 study that I believe is irrefutable is the absolute conclusion that surface waters reach and recharge the aquifer -- from whatever source. What pollutants might these other waters carry even with the 208 controls operational and what will the impact on ground water quality be from these sources? This is a direct impact created by the construction of a sanitary sewer system and the lifting of any growth controls that might be in place if one were not provided. The DEIS needs to present a very realistic picture of just what the people of this county are faced with in the future if indeed a sewer system is constructed.

13 9. Page 149 refers to Table 2-29 as a source of factors that can yield areal pollutant loadings. I believe the correct reference should be to Table 2-30.

This concludes my initial comments on the DEIS and I would appreciate careful consideration of them in the preparation of the final EIS. I am co-president of the Preserve Our Paradise Homeowners Association which is located south of Spokane on Paradise Prarie. Our aquifer is relatively shallow and in Basalt and is separate from the Spokane-Rathdrum Prarie Aquifer. If we are going to be expected to vote on a county-wide GO bond issue, then we need to be assured that a sewer system is absolutely essential to safeguarding the Spokane aquifer and that we will not be voting to tax ourselves for a system that promotes pollution rather than eliminating it.

14 Also included for your information is the GWIE which I prepared on the Sullivan Park Center. As you can see from its contents, the sanitary sewage discharge to the aquifer represented only

14 46 percent of the total surface water projected to reach the aquifer. This means that the actual major source of water recharging the aquifer under the conditions of the study was other than sanitary sewage. This other water, while definitely not a major source of nitrates, is the carrier of other materials possibly much more dangerous to public health. If you read my report, you will note that I too had an extremely difficult time in attempting to truly define the impact on groundwater quality -- but at least I tried! For a study that took only 2 weeks to complete at a cost of $ 850, I believe that this report comes close to what is expected by EPA of a private project under your GWIE guidelines. I have to believe that EPA's budget and time frame were much more extensive than mine and yet EPA has failed to give the public a realistic picture of what we are getting ourselves into. It is nice to read about the impact of this project on the flora and fauna, education, employment and air quality, but the primary purpose of this DEIS, as stated on page 80, is totally lacking. I find the absence of this assessment on ground water quality totally unjustifiable when compared to my experiences in trying to satisfy EPA personnel on projects I have worked on. I am also enclosing the comments I received back from EPA on the Summerfield East project (a proposed 266 home development) for your information. If the EPA truly expects this kind of a GWIE from private consultants, then the least we can expect is that the EPA will prepare a comparable assessment itself.

Thank you for the opportunity to comment on the DEIS and to get several things off my chest. If you have any questions on any of the materials I am enclosing to you, please feel free to contact me at any time.

Sincerely,

Rhys A. Sterling

Rhys A. Sterling, P.E.
Consulting Engineer

Enclosures

West 817 Crestview Road
Route 1
Spokane, WA 99204

May 25, 1981

Ms. Kathryn M. Davidson, M/S 443
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Subject: DEIS on Spokane County Comprehensive Waste Management Plan.

Dear Ms. Davidson:

15 Attached is an article from the May 24, 1981, SPOKESMAN-REVIEW that should be considered together with my comments to you dated May 21, 1981. Specifically, my comment #1 refers to the impact of continued discharge from Idaho municipalities and industries in light of the pressures put on the Liberty Lake Sewer District to be intercepted by a general Spokane Valley sewer system. What restrictions are being placed on the NPDES permits for Idaho dischargers to monitor toxic compounds that may be detrimental to surface and ground water quality? Again, I feel this is very important because of the burden of financing a costly sewer system that is going to be asked of the Spokane area residents. The sewer system is being 'sold' to the people on the grounds that it is the panacea to protect water quality of the aquifer -- will it really?

I would support a general sewer system in certain areas of North Spokane due to soil limitations that render on-site sewage disposal ineffective after several years of operation. However, in the Valley we have a different problem entirely (except for those community type sewage disposal systems installed under old county regulations that allowed overloading of the drainfield area and resultant premature failure).

16 The question needs to be addressed and answered to the best of your ability: will a general sewer system in the Valley solve a real pollution problem and protect the aquifer or will it eliminate the sole problem of nitrates from sewage disposal and allow the pollution of the aquifer to occur via other induced sources that the 208 plan cannot in all honesty adequately mitigate? As stated in the DEIS on page 80, this is the question and major environmental issue of the project; and it was never answered.

Thank you for considering these additional comments.

Sincerely,

Rhys A. Sterling

Rhys A. Sterling, P.E.
Consulting Engineer

Attachment

RECEIVED
MAY 28 1981
ENVIRONMENTAL EVALUATION BRANCH

Shared sewer plant proposed

By MATTHEW COLLIN
Spokesman Review correspondent

COEUR D'ALENE, Idaho — **Most Kootenai County residents now accept the premise that** sewage shouldn't be dumped into septic tanks located over the Rathdrum Prairie Aquifer, the area's major source of drinking water.

Instead, the ideal is to collect the sewage, treat it and then dump what is left into the Spokane River. Coeur d'Alene already has a plant on the river that it must expand.

North of the city — uphill, it is important to note — are the rapidly growing cities of Hayden and Hayden Lake, as well as the Coeur d'Alene Airport, all of which will need sewers soon. These three areas are also planning to dump effluent into the Spokane River.

This leads some local engineers and health district officials to ask why the two cities and the county-owned airport don't get together with Coeur d'Alene and build one big sewage plant.

Building one large plant would achieve "economy of scale", meaning that it's cheaper than building two to four smaller plants.

But Coeur d'Alene city officials aren't very excited about the idea. They say their neighbors to the north won't need to build their plants for another decade, but Coeur d'Alene has a problem now — a problem that has resulted in a moratorium on all new sewer hookups.

Last fall, the city thought it had a 20-year solution to that problem in the form of a brand-new, $22 million, 6-million-gallon wastewater treatment plant.

Now, because of federal budget cuts, the best the city can expect is a $1 million "quick-fix" expansion of its existing plant.

But even if Coeur d'Alene does get money to expand that plant, it will only be a stop-gap measure; sometime in the not-too-distant future it will have to face the problem again.

The city does not want to have to use the existing site permanently, however, both because residents of that area are complaining about that plant's odor and because North Idaho College's long-range plans direct campus growth toward the plant.

What the city would like to do is move its plant a mile or two downriver — to about the same place Hayden, Hayden Lake and the airport would bring their sewage.

"It's all a matter of timing," says Jim Kimball, a consulting engineer working with Hayden and Hayden Lake on their sewer plans.

Kimball admitted Coeur d'Alene has to come up with some immediate solution to its dilemma, but he predicted that if the city doesn't come up with a "20-year solution" by the time its counterparts to the north are ready to get into the sewer business, the smaller communities will find themselves in "a good bargaining position."

But Coeur d'Alene Mayor Don Johnston says talk of a regional sewer plant amounts to "going back over ground we walked on three years ago."

At that time, Coeur d'Alene had just recognized the need for a new plant, and the federal Environmental Protection Agency was encouraging it and Post Falls to work together on a single plant.

On the river, Coeur d'Alene already has a plant that it must expand.

The idea was to build the big plant in Post Falls, which is downhill from Coeur d'Alene, thereby making it possible to move the larger city's waste to the new plant by means of gravity-feed sewer trunk lines.

Johnston says that when the EPA discovered the interceptor would cost nearly as much as the plant itself, the agency quickly ruled out that alternative as not being cost-effective, and it decided to go with two smaller "neighborhood" plants.

Kimball, however, says Coeur d'Alene has never looked into the possibility of a regional plant shared with cities to the north.

He says his research has shown that running gravity-feed interceptors from the Hayden-airport area down Ramsey Road to the river would be far less costly than going to some kind of "land-application" sewage treatment.

Kimball says that if Hayden, Hayden Lake and the airport had to go to land application, which involves using treated wastewater for irrigation, pumping stations would be needed to send the wastewater uphill through trunk lines.

What's more, he says, Coeur d'Alene would not be asked to share the cost of an interceptor from the Hayden area, and if things work out right, no federal money would be required for the project.

The idea there is to collect money from sewer "capitalization fees" to pay all cost of both a sewage plant and interceptors.

Ken Lustig, an environmental specialist with the Panhandle Health District and another supporter of the regional-sewer concept, explains that the plan involves having developers install community drainfields — large septic tanks designed that cannot be tied into a sewer to serve a number of homes — when they build subdivisions. Then either a city or the county would guarantee operation of the drainfield.

By doing that, he says, the city or county can charge a capitalization fee, included in the price of each home, as well as monthly sewer fees.

The money would be invested until there was enough to build both the interceptors and the plant. Each of the cities involved, and perhaps the county, would buy a percentage of its capacity of the plant, Lustig says.

The capitalization fees are especially important in the wake of federal cutbacks, says Ken Babbin, another health-district environmentalist.

Babbin says federal funding for sewers was designed to correct problems in existence prior to 1972, and it is unlikely the feds will pay to sewer homes built after that time.

New growth, he says, is going to have to pay for itself.

But again, city officials in Coeur d'Alene are skeptical. They have been charging capitalization fees for the past couple of years, and so far have raised only $385,000. City Administrator Eugene McAdams say $260,000 of that came in just before Coeur d'Alene imposed a moratorium on new sewer hookups, when there was a rush for building permits by developers who wanted to make sure they could tie into the sewer system.

"The numbers just don't work; engineers are not accountants," says Johnston.

Response to Comments from Rhys A. Sterling

1. The reasons that EPA has relied on 208 plan data and analysis for its EIS groundwater impact analysis are stated in the section of Chapter 2 entitled Relationship of the CWMP to the 208 Water Quality Management Plan. EPA realizes that the potential for groundwater contamination from urban growth is significant. It is felt, however, that the 208 plan has identified and addressed this concern. Implementation of the 208 plan's water quality protection policies should rightfully include detailed analysis of individual projects that have any potential to affect the groundwater.

2. Wastewater facilities plans, including the CWMP, are intended to address water quality problems created by sanitary wastewater disposal practices. As you have indicated, sanitary wastes are a primary source of nitrate pollution. Nitrates, however, are not the only constituent of concern. A wide variety of other toxicants are typically found in sanitary wastes, including household cleaners, solvents, pesticides, and pathogenic organisms. By collecting and treating these wastes, the toxic materials are not allowed to percolate into the local drinking water supply. The proposed interceptor system will also be collecting a small amount of industrial-source wastewater, which can also contain a variety of hazardous materials.

EPA is not ignoring the significance of urban runoff and its effects on water quality. As stated in several sections of this Final EIS, EPA strongly supports efforts to continue with the county's 208 program; this includes timely implementation of strategies to control urban runoff.

3. Protection of the environment in general and the Spokane area's groundwater in particular requires that all responsible agencies use their authority to prevent and abate pollution. EPA contributes financial aid and technical expertise to local jurisdictions in planning for control of water pollution through the 201 and 208 programs. EPA must rely on local agencies to use their powers and energies to implement the planning recommendations.

Work completed on the 208 plan to date is only one segment of the work that is necessary to abate and prevent pollution. The county must now proceed to use its land use planning and growth management capabilities to see that aquifer pollution is not increased.

The county should continue to pursue the recommendations contained in the 208 and modify them as necessary to adequately protect the area's drinking water. This includes methods of treating urban runoff and dealing with the potential for toxic spills over the aquifer.

4. The Spokane County 208 plan has been rigorously reviewed by EPA Region 10 in Seattle, and has recently been approved with conditions. The positive and negative aspects of the entire program were carefully weighed before the conditioned approval was granted. All of the threats that exist to groundwater quality will not be automatically eliminated by adoption of the 208 plan, but it does contain positive measures for aquifer protection. Local efforts must now refine the 208 work so that the goals of the program can be achieved. This could include a program of monitoring grassed percolation areas to determine their long-term capacity for filtering out urban runoff pollutants.

5. No attempt has been made to identify the Liberty Lake treatment plant as a culprit. EPA realizes that discharges from the present Coeur d'Alene and proposed Post Falls, Idaho treatment plants are also upstream from Spokane. For this reason, EPA is placing waste discharge restrictions on those plants that are similar to the controls placed on Liberty Lake. In their long range 20-year plans, the Idaho plants must include facilities for 85 percent phosphorus removal and dechlorination as well as Best Practicable Wastewater Treatment Technology (BPWTT).

Neither of the facilities plans being pursued by Post Falls and Coeur d'Alene currently include land application of wastewater as a preferred action. The land disposal option was investigated by both cities, but plans are now proceeding for year-round discharge to the Spokane River. These discharges must meet the same rigorous effluent quality standards being applied in Washington.

6. The USGS groundwater study has not been completed. When the results of this study are available, they can be used to guide ongoing 201 and 208 planning efforts. EPA does not feel it is premature to proceed with 201 planning in the absence of the USGS report data.

7. The use of storage basins during wet weather flows is not intended to sanction continued combined sewer overflows (CSOs) from the City of Spokane. The city is currently proceeding with the design phase of their CSO project and is on the state priority list for further funding of this project.

8. Since publication of the Draft EIS, the facilities plan engineers have determined that excavation of storage basins adjacent to the existing gravel pits would be preferable to filling in the existing pits. This will not require a large amount of fill material; in addition, it avoids the use of an area that penetrates the aquifer. The exact locations of the new excavations have not been identified.

9. The facilities plan engineers indicate that a double seal will be placed under each storage basin. PVC or clay will be used as an underline and the basin surface will be asphalt. The basins will also be constructed as a series of cells so that maintenance and repair can be accomplished without draining the entire basin. While these measures will not eliminate the possibility of a leak, they should minimize the chances of a significant contamination occurring below the basin.

The project engineers indicate that observation wells adjacent to the basins will be used to detect leakage. The DOE must determine if more precise monitoring, including soil moisture monitoring, is needed to protect the aquifer.

The impact of leakage from a basin could be severe because of the large volume and untreated nature of wastes involved. Before the basin designs are approved, adequate contingencies should be built-in to protect the aquifer from leaks. This should include an effective surveillance and monitoring program at each basin site and a means of rapidly isolating and repairing leaks.

10. Please refer to Response Number 7 above.

11. Allowing the top portions of the aquifer to become contaminated while drilling deeper wells to tap drinkable water is not a feasible alternative under the "sole source" aquifer program. Moreover, the variation in contaminant density provides a mechanism for more dense contaminants to reach the deeper portions of the aquifer, thereby making the deeper water unfit for drinking purposes without treatment.

12. The percentage of all water applied to the surface within the project study area is unknown. It is safe to assume, however, that a large percentage of the water that is not intercepted will eventually percolate to the groundwater. This percolate will contain a wide range of substances, depending upon its source and its path into the ground. Table 2-30 of the Draft EIS lists a few of the contaminants expected in runoff.

These nonpoint sources of pollution will continue to affect the aquifer as long as water percolates from the surface into the aquifer. The 208 plan has identified methods of controlling some of the runoff inputs.

There is no guarantee that growth controls will be instigated in the Spokane area if centralized wastewater service is not available. The lack of a regional sewer system has not limited development to date. Therefore, to take no action toward solving the sanitary wastewater problem on the pretext of limiting the extent of the nonpoint pollution sources is not in the best interests of water quality protection. EPA feels that Spokane County should proceed on both fronts to contain sanitary waste and nonpoint sources of pollution that affect the local water supply.

13. The reference to Table 2-29 is in error. As you indicate, Table 2-30 contains areal pollutant loading factors.

14. Refer to response number 1. EPA has focused its impact analysis on the CWMP's sanitary wastewater collection and treatment aspects. The county 208 plan has addressed the issue of growth and its potential impact on the Spokane Valley Aquifer. Specific development proposals over the aquifer should be reviewed in detail in light of the findings and recommendations included in the 208 plan. EPA feels the groundwater impact analysis contained in the CWMP EIS is sufficient to indicate the ramifications of constructing wastewater interceptors in Spokane Valley and North Spokane.

15. EPA has just completed a technical assistance program for the City of Coeur d'Alene to identify industrial waste dischargers to the city system. The city is also currently completing a pretreatment program to control toxic and chemical substances. Implementation of controls on industrial dischargers will be through local ordinances. The City of Post Falls currently has no industrial waste dischargers and does not require a pretreatment program.

16. EPA feels that sewering will abate an existing water quality problem-contamination of the Spokane Valley Aquifer. This includes more than just nitrate contamination; it is becoming increasingly evident that domestic and industrial wastes contain a wide variety of potentially toxic substances that should not be allowed to contaminate a sole drinking water source.

Extension of interceptors further into the Spokane Valley should occur in conjunction with methods of controlling urban runoff (and other nonpoint) sources of pollution. This implementation is the responsibility of Spokane County and a variety of other state and local agencies identified in the 208 plan. The potential for significant deterioration of aquifer water quality exists if sewering and growth in undeveloped portions of the valley proceeds in the absence of nonpoint source pollution control.

Chapter 5

ORAL TESTIMONY ON THE DRAFT EIS AND EPA RESPONSES

Introduction

A public hearing on the Spokane County CWMP Draft EIS was held in Spokane, Washington on May 14, 1981. The following pages contain the transcript of the oral testimony presented at that hearing. Each comment requiring a response has been identified by a line and a number in the left-hand margin of the transcript. Following the transcript, each comment has been responded to in numerical order. If the comment has been responded to in the text of an earlier chapter, the reader is referred to that chapter.

PUBLIC HEARING
ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
SPOKANE COUNTY COMPREHENSIVE WASTEWATER
MANAGEMENT PLAN
PREPARED BY
THE ENVIRONMENTAL PROTECTION AGENCY

PUBLIC HEALTH BUILDING
SPOKANE, WASHINGTON
MAY 14, 1981

PANEL MEMBERS

ELIZABETH CORBYN, Hearing Officer
Environmental Protection Agency

BRUCE COLLINS, Collins And Ryder, Inc.
KATHRYN [illegible], Environmental Protection Agency
MICHAEL [illegible], Jones and Stokes Associates, Inc.
ROBERT [illegible], Economic and Engineering Services

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PROCEEDINGS

LISA CORBYN: I would like to call this meeting to order, please. My name is Lisa Corbyn, and I am with the Environmental Protection Agency in Seattle, Washington. Mr. Donald Dubois, our Regional Administrator, has designated me to be your Hearing Officer for tonight's proceedings. We appreciate your attendance tonight and we are pleased that many of you have taken the time to come here and share your views with us. I am sure that many of the issues to be discussed tonight are of direct concern to you all.

For purpose of the hearing record, I would like to note that this public hearing was convened at 7:35 p.m., May 14, 1981 in the Spokane County Public Health District Auditorium in the City of Spokane, Washington.

As Hearing Officer, I would like to take a few minutes to tell you the purpose of tonight's hearing and describe the hearing agenda which will lead to orderly presentations by each of us here. Even though this is an informal public hearing, I would like to pass along a few rules of procedures which will assist us in making sure that everyone has the opportunity to participate in tonight's discussion. Our primary purpose tonight is to provide the opportunity for local citizens to comment on two

recently published documents:

1) The Comprehensive Wastewater Management Plan for Spokane County, prepared by Spokane County, and;
2) EPA's Draft Environmental Impact Statement on that plan.

The County of Spokane has applied to the Environmental Protection Agency for grant assistance in accordance with Section 201 of the Clean Water Act for purposes of initiating a plan to identify ways to eliminate onsite waste disposal facilities in the highly urbanized unincorporated areas surrounding the City of Spokane. EPA has previously awarded to Spokane County a Step 1 planning grant to develop the Comprehensive Wastewater Management Plan which outlines a number of alternatives for providing these facilities.

The Draft Environmental Impact Statement has been prepared by EPA. It consists of a coevaluation of each of the alternatives identified in the County's Comprehensive Plan. The EIS has been prepared pursuant to the National Environmental Policy Act. The Environmental Protection Agency is required to prepare such statements on major Federal actions which could have a significant impact on the quality of the environment. The Federal action in this case would be EPA grants to the

County of Spokane which, along with State of Washington grant funds, would assist the County in Step 2: designing the selected facilities; and Step 3: actually constructing the selected facilities. Before any decision can be made regarding the award of additional grant funds for these projects, the EIS process must be completed. The remaining steps in the process include receipt and review of public comments on the Draft EIS, both at this public hearing and through written submissions, followed by the preparation of a final Environmental Impact Statement and receipt of comments during a 30-day review period following the final publication.

For those of you who would like a more detailed account of the remaining steps in the EIS process we will have an opportunity to discuss it later this evening.

Again, let me emphasize that the purpose of tonight's hearing is to receive oral comments on the proposed facilities and EPA's EIS. We are not going to limit the scope of your inquiries or your input, but I hope that each of you in your comments and statements will keep our purpose in mind.

Those wishing to testify at this public hearing have been encouraged to review the draft EIS. The EIS has been on file at the City of Spokane Public Library since February 20, 1981. Copies were also mailed to State

and local officials, and to numerous citizens of the area. Persons unable to testify at tonight's hearing or wishing to furnish comments after the hearing may do so by writing Kathy Davidson at EPA's Regional Headquarters, 1200 Sixth Avenue, Seattle, Washington 98101. The close of the comment period is May 29, 1981. Kathy Davidson is the Project Monitor on this EIS for EPA. This is Kathy. If you did not get EPA's address, please see Kathy sometime during tonight's proceedings.

I would also like to mention at this time that questions from the floor should be held until the third stage of this hearing. A question and answer period will be held after all interested parties have had the opportunity to present oral comments. And given the amount of people we have so far who have signed up to make presentations, we should have sufficient time to answer all your questions.

I would next like to give you the agenda for tonight's hearing and introduce the other people sitting at the table with me. This is Mr. Robert Wubbena from Economic and Engineering Services (EES) and Mr. Bruce Collins from Collins and Ryder consulting engineers. They will give a brief presentation on the various alternatives presented in the Comprehensive Wastewater Management Plan. Economics and Engineering Services are consultants to the County of Spokane and prepared the plan.

Over here is Mr. Michael Rushton of Jones and Stokes Associates. Mr. Rushton will make a brief presentation outlining the more significant environmental impacts associated with each of the alternatives. Jones and Stokes are the consultants who assisted EPA in the preparation of the EIS.

After these short presentations, we will receive oral comments on the projects and documents. I will call on the individuals in the order that I have received their cards. However, if anyone needs to leave early, I would appreciate knowing so I can schedule you early in the hearing. Following the presentation of testimony, we will begin the question and answer period. Questions may be asked of the panel through me. As Hearing Officer, I reserve the right to limit questioning, call recesses, adjourn and reconvene the meeting. I am going to ask that presentations be limited to 10 to 15 minutes. Written material should be left with me following your presentation or sent to Kathy Davidson at EPA's Regional Office in Seattle for inclusion in the record. You are under no obligation to submit written material. A written account would help us consider your statement more fully and keep our record in order. Written comments received on or before the close of comment period on May 29 will be

responded to in the final EIS.

A record of the hearing is being made by the court reporter, therefore, I ask that when you speak, you come up to the podium; secondly, that you speak clearly, state your name, address, and affiliation, if any. Also, it will be helpful if you would come forward so that the audience may hear your comments and you will be more easily picked up by the court reporter.

Copies of this transcript will be made available for your inspection at EPA's Seattle office and the City of Spokane library.

Are there any questions as to the procedures that I have outlined? If not, I will ask Mr. Wubbena to begin his presentation.

BOB WUBBENA: Thank you, Lisa. Our firm, in response to the scope of work that was prepared for the County and for the City, and approved by DSHS, EPA, DOE, and the regulatory agencies involved, proceeded to develop the Comprehensive Wastewater Management Plan in the fall of 1979. We had several major objectives involved that are represented through the various graphics on the wall here.

One of our major objectives was to attempt to consolidate and to integrate the various facility plans, wastewater facility plans that have been developed for the north potential facility area, the Newman Lake area, the City of Spokane, and numerous other studies that had been developed for wastewater management in the Spokane area.

In addition to that, and a very important aspect of our study, and a follow-on to a very intensive citizens' involvement plan was the 208 Water Quality Management Program was to integrate the findings, and to develop a capital improvement response program to the findings of the 208 study. In addition to the coordination and integration of the facility plans, and the 208 Water Quality Management Plan, we were also, by virtue of the need and the demand that was incorporated within our scope of work, to essentially integrate, and involve, and coordinate the development of the comprehensive land use planning activities in both the County and the City. Now, since this was an ongoing process, it was an effort in terms of trying to develop a facility plan that was both responsive to the demonstrated, existing need for wastewater management, as well as the projected wastewater management needs that would evolve from the comprehensive land use planning activity.

Another parallel activity that was a part of our consideration was the ongoing activity with the coordinated water system planning activities because one

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of our following objectives was to develop a Wastewater Management Plan that was consistent with the other utility planning activities within the study area.

We looked at the whole study from three major approaches. It took three approaches to the development of the study, and many of you have participated in previous committee meetings, or citizen meetings, or public information meetings, and have heard the outline that I am talking about at this point; but basically it's to be divided into the management element, the procedure or administrative element, and the capital facility element of the facility's plan.

It was our perspective that the extensive studies that had been done were in many ways done with a sort of a specific purpose in mind and objective in mind that did not necessarily consider all the wastewater management needs or the total involvement in the Spokane area; and, therefore, our objective was to integrate these into a program that was represented by the management procedures of both the County and the City, and the other local government agencies. So, through this process we have outlined in the Comprehensive Wastewater Management Plan a major program that attempts to lay out a very specific management process that takes advantage of and utilizes the existing management procedures and administrative procedures of both the County and the City, as well as the State and Federal Government.

The administrative procedure then was the need to follow on with a management program to insure that each of the recommendations, each of the programs that we recommended in the Comprehensive Wastewater Management Plan would also fulfill the local, State and Federal requirements in a way that once we were through with this process, that the implementation program would comply with the various laws, and would hopefully proceed in a fairly streamlined and consistent manner, and consistent with the objectives that those laws are set forth in. In response to the management and administrative procedures we incorporated within the plan, then, and we integrated the capital facility recommendations of the individual plans; we looked for conflicts in those respective capital facility plans; and where those conflicts may or may not occur, we attempted to resolve those conflicts and put forth the capital improvement plan that we felt would respond to both the identified needs for existing situations, as well as the projected needs as reflected in the policies of local and State Government, and came up with a series of alternatives, which are on the side wall over there. Following me, Bruce Collins will present briefly to you those alternatives and talk specifically to the recommended

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alternatives that we arrived at in December of last year.

Following the conclusion of the Comprehensive Wastewater Management Plan, utilizing the data available to us at that time, we printed Draft CWMP. In January of this year then Wasteload Allocation Study was issued by the Department of Ecology, which was prepared by URS Company, and following the preliminary analysis of that Wasteload Allocation Study we asked to do some additional or supplemental studies, to again direct some of these specific issues that were raised in that particular study. So, since early in this year we have pursued additional information and developed some additional sub-alternatives to the recommended alternatives on how to respond to the Wasteload Allocation issues that were raised in that particular study. Again, Bruce will address that information and the summary documents that were placed on the back tables. There are two documents. One is Volume I, and one is Volume II. Volume I is the information that we prepared, and represents basically the Comprehensive Wastewater Management Plan that was completed in December of 1980. The Volume II, supplemental studies aspect, represents the work we have completed since that time and submit here as our response to the information that was incorporated in the Wasteload Allocation Study and further supports the recommendations that will b incorporated into the final Comprehensive Wastewater Management Plan following the hearing here tonight, and in our final process.

So, the process or the program that we have followed then is to, again, develop a management system that integrates the individual studies that represents and integrates the 208 Water Quality Management Study that was done early on and had extensive public involvement, and then developed a capital facility response to those respective studies.

I would like to turn this over to Bruce at this time to briefly go over these individual alternatives, and to discuss some of our findings and our recommendations, and then I will follow on, from Bruce, with our final recommendations and our discussions tonight.

* * * * *

MR. BRUCE COLLINS: Thank you, Bob. Briefly, to summarize the alternatives, I think it would be proper to initially indicate that the range of alternatives we have looked at divide into possibly very basic categories: One, a range of alternatives which utilizes the existing capacity available for regional purposes in the City of Spokane Central Wastewater Treatment Plan. Second would be a range of alternatives which provides facilities

which either supplement or provides separate treatment capabilities. And, also, we can break the range of alternatives into two other broad categories, one where we are utilizing conventional, mechanical, chemical treatment as with the existing advance wastewater treatment plan, and those which deal with some kind of ultimate disposal by land application, which again minimizes both the mechanical and chemical treatment aspects as we find it at the existing plant.

Also by way of preliminary comment, the range of alternatives, again, deals very carefully with the issue of to what extent the existing conveyance facilities of the City of Spokane can be utilized for regional service purposes to the outside or outlying areas of the County. This becomes a very complex problem, which I won't go into in detail tonight, involving the fact that the existing conveyance facilities of the City of Spokane are old facilities, they were designed and constructed at a time when there was no particular attempt made to exclude ground water or storm water. The City of Spokane is presently about two-thirds a combined system. So, the big question: How do we use those conveyance facilities to serve outlying areas which would be coming in under tight specifications for elimination of ground water, and so on?

Without going into a lot of detail, the concept that has been generated out of this study, and the one which really permits the alternative to work that we, as the staff are recommending, involves the use of the existing conveyance facility in the City of Spokane only during that period of time when there is no wet weather flow into it. To do this--and I will show you when we briefly look at the alternatives--, to limit the inflow from the outlying areas to the existing City conveyance system requires a system of equalization basins with sufficient capacity to hold those flows during a period of wet weather. So, we can bridge the flow, release the flow following the wet weather, and so on.

With that, I will briefly go around the room and invite you at break time, or whenever, to look at the maps closely. But, to give you a very quite summary of what the alternatives are, starting down the wall--

(Please see description on insert.)

With that, we will come back quickly to a summary of the alternatives. These are not listed in alphabetical order, but in order of cost effectiveness, based upon the combination of effluent cost, and/or annual cost to give us a total economic value for each plan.

Again, the borders as they come out in terms of cost effectiveness, at a total value of 72.2 million. The second most effective would be Plan C, providing for separate treatment in North Spokane, essentially breaking it down rather than pumping it back. The third most prospective plan is substantially to provide separate treatment for the Spokane Valley. I might add that from an environmental standpoint it would entail a discharge to the river, upstream from the City of Spokane. And, from here we continue to escalate to land application, North Spokane, the Valley, Spokane Valley combined, and Plan B, separate treatment for the North Spokane to Spokane Valley, and then the downriver disposal alternative in Stevens County jumps up very heavily because we have a long ways to go, quite a bit of pumping cost; and alternatives such as this, and such as it involves long-term commitments in terms of pumping requirements.

That is a very rapid summary of the basic alternatives, again relating to the fact that Plan A appears to be the more competitive of the group.

As Bob indicated, and again we always seem to be a little bit out of sequence in our planning as far as wastewater, hopefully we would have had something like the Wasteload Study up front to give us an idea of what the impact would be of the various loads on the Spokane River, and on downstream, along the lakes, from all of the input including the City of Spokane, and up into Idaho. As it turned out, the preliminary draft Allocation Study was made available just a few weeks ago, but it did point to a very serious concern in terms of how far we continued to grow in terms of both critical nutrients and toxic elements. This became the basis then of taking a look at those impacts, and determining an element of the Comprehensive Wastewater Management Plan, which would respond to the planning of the Wasteload Allocation Study.

So, this has sponsored a family of several alternatives which we have tacked on to Plan A recommended alternatives, and indicates the things that may have to be done in the event that the DOE, or the EPA determines the allowable allocation of waste in Long Lake, or whatever reaches the Spokane River be such that we would have to either incorporate or provide some other type of treatment relative to Plan A.

Starting with A-1, we are looking at the potential for going to seasonal removal of phosphorus. It's something that has been discussed for many years on the basis that the mechanics of Long Lake, the hydraulic flow through Long Lake suggests that the critical introduction of nutrients starts discharging in the spring, that the heavy flow through the wintertime really passes on through and does not contribute to the reservoir nutrients and biological activity in Long Lake. Anyway, we compared what is the existing situation with possible removal of 85 percent, year-round, which runs about 1.36 million dollars, as against what would be the cost every five months, and removing just over a five-month period, starting essentially the 1st of May, and on into October. This last column I won't go through. It indicates what the impacting of these dollars would be in terms of user cost and the added increments of a sewer bill to provide financing for the supplemental requirements.

The second thing we looked at, in the event that we get to the point where we can't take any more phosphorus into Long Lake is, what do we do, put it in a bag and shoot it to the moon? You know, what are the alternatives? One of the alternatives that we looked at on this wall--there is a more detailed map and slides made available--is a very intriguing alternative from a purely speculative point of view, and it extends from the initial look at the land application at least during the seasonal period that we can't tolerate other nutrients or other phosphorus into Long Lake.

We did look at the sites available, providing for storage or irrigation to the west area, and that would require for us to provide storage to provide for proper distribution to irrigation. Without going into detail, we looked at the alternatives, primarily based upon either total power generation or irrigation, the idea of our power generation being that we pump it up to the reservoir. It might be more valuable to return that through a turbine and generate power on the way back than to put it up on the land irrigation.

One of the problems we have with irrigation up in the west area now is that a lot of that land has been chalked up in five-acre parcels. It's very difficult to assume that we could put together a large enough block of land to provide large enough disposal. If you have questions on that, I would like to discuss it with you. The power generation cost about $13 million, and would add $300,000 a year; and irrigation is substantially more costly, at about the same operation and maintenance.

Going on down the list, and I will run through the rest of these fairly rapidly, and there are additional things that we can do, such as the dechlorination wastewater treatment plant. In two of the areas

identified the Allocation Study deals with chlorine toxicity and ammonia toxicity, and these are elements that can be dealt with, within the framework of the existing plant. Another thing we can do would be to do in-lake treatment, which would involve chemical treatment. Another thing that shows up is the modification of the outlet of Long Lake Dam, which provides a deeper outlet, which gets down into the deeper strata of that lake, and possibly do some good things to get at one of our very serious problems, and that is the lack of oxygen in the deeper layer of the lake. Washington Water Power is intrigued that this could be incorporated into a fifth power base. It is a possibility. Another thing we looked at is water quality management areas like banning detergents in households, and the ban would not yield a sufficient cost savings because again we are squeezing above the stage line of 85 percent, and it would cost the householder more for a more costly detergent.

Looking at another thing, non-point control, which is certainly a good idea in dealing with the loading of phosphorus. The last thing which may be academic is to do essentially an abandoning of the aquifer in terms of a no-action plan, recognizing that ultimately we are going to deteriorate our ground water, where treatment of that ground water. This would be extremely costly.

This is not a fictitious number. We are talking something around $300 million for a network treatment plant to deal with very exotic removal of very difficult constituents.

Another possibility along the same line would be a new source of surface water and transmission distributions into the existing water system.

With that, I will return to Robert.

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ROBERT WUBBENA: Just a quick summary. On the bottom of the very last page is a flow chart that he referred to as the Water Quality Control Response Plan. Basically, we returned to Alternative A, and we laid out a program of utilization of the alternatives that we think are most practical at the local level in responding to this. It's time dependent and flow dependent, and not dependent upon a specific standard in Long Lake. A final decision will be dependent upon the degree the decision of the EPA in terms of the water quality requirements for the local program.

So, with that I will turn it back to you.

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LISA CORBYN: I would like to introduce Mike

Rushton.

MICHAEL RUSHTON: I am going to speak from here. If anybody has any problem, I will move over to the podium. I will speak loud enough for everybody to hear me.

EPA got involved in the project, in the Environmental Impact Statement, back in January of 1980, shortly after the facility plan process was started, and the idea being that to prepare an environmental document on this plan, simultaneously with developing a plan. This is done in an effort to save time, than doing an environmental project analysis after it's done.

Scoping meetings. Two public scoping meetings were held in Spokane during the last year, and we talked about the EIS that was going on, and talked about the facility plan, and these meetings talked about the environmental issues that had been raised in the earlier parts of the facility plan, and sought public input to what we eventually published as a Draft Environmental Impact Statement. That document was distributed to the public in February, shortly after the facility plan was distributed.

Originally we had planned to have a hearing on the document in March, the end of March, but because of the Wasteload Allocation Study being completed, and additional information being sought from the facility planners, that hearing was postponed to tonight, so we can take advantage of this planning information that has been developed here in the last few months.

The Draft DEIS, which the hearing is about tonight, analyzed seven alternatives: the six that you see on the wall, plus a no-action alternative, basically doing nothing. The no-action alternative requires topics of discussion in the DEIS, prepared by the Federal Government.

The six action alternatives, which I will call action alternatives are A through F, and some of those impacts of those alternatives are common to each one, and these are some of the more important environmental impacts on the project. And, those alternatives would eventually result in eliminating all the domestic waste discharges to the Spokane River upstream of the City of Spokane at least as far as the State Line goes. This includes the elimination of the Liberty Lake discharge.

This is obviously beneficial from both a water quality and public health point of view to the river as it flows through the City of Spokane. All of these alternatives eventually allow for the servicing of up to 81,000 residents now living on the Spokane Valley Aquifer and using the on-site community waste disposal system. This impact, both septic tank and drainfield elimination is an

obvious benefit, water quality benefit, of all six of the alternatives.

All six alternatives will greatly reduce the number of new on-site systems that would be installed in that area. And, the planning and eventual construction of sewers and connecting sewers, fewer new homes in that area would be going on a septic tank system. They would be going onto a single collection system.

In order to construct those collection systems out there, each individual homeowner essentially connected to that system would be faced with a cost of anywheres from $3200 to $6600 through a local improvement district for the wastewater collection system. Each would also pay an undetermined fee of tying their house into that collection system. This is in addition to any costs that would be assessed to provide money or the major facilities that we are discussing here in terms of major interceptors and equalization basis.

I am going to run through briefly some of the more specific impacts that are related to each of the specific alternatives. The first alternative is Alternative A, which is the recommended plan in the Wastewater Management Plan. As Bruce mentioned, it has the lowest present worth cost of the six action alternatives, and I won't go through the cost numbers since he has already done that.

Alternative 2 would increase the waste discharge to the City of Spokane Treatment Plant from its current 32 million gallons per day to about 59 million gallons per day by the year 2002. So, there would be a gradual increase in the discharge from that treatment plant to the river. This would increase the nutrients loading into the river and would eventually stimulate the increase in algae growth immediately below the outfall into the river and also downstream impoundment. This increase will be detrimental to the recreational uses of the river and lake, and in extreme situations could be a public health nuisance.

In low river flow and warm weather conditions the effluent ammonia and chlorine concentration could exceed EPA recommended criteria for protection of cold water fish existing in that river. I am talking about the cold water fisheries, which in this case, below the Spokane City Plant are planted trout fish, Brown trout and Rainbow trout, and they are planted.

The raw sewage storage reservoirs of Alternative A, which would be 3 identified in the Comprehensive Plan, is one in the Valley, an existing gravel pit, and there would be on in the Indian Trail area, and the--lagoon. These storage areas will create odor and aesthetic impacts

in residential areas.

Alternative B, which is the separate treatment for Spokane Valley, has a present worth cost of approximately $26 million more than Alternative A.

Alternative B would increase the wastewaters discharge to the river. Actually it would split the discharge to the river, some of it going to the City of Spokane Treatment Plant and another discharge would occur at the new plant near Felts Field. The discharge at Felts Field, which is upstream from the City, would detract from the water contact recreation and aesthetic river uses through the City of Spokane. It could also affect the quality of City drinking water extracted near the river downstream from the proposed Felts Field discharge.

The treatment plant location at Felts is identified near Felts Field in the residential area.

Alternative C, which is separate treatment for North Spokane, has a present worth cost of $5.2 million greater than Alternative A. It would increase the wastewater discharge from the Spokane Treatment Plant by about 23 million gallons per day by the year 2002. This is about 5 million gallons per day less than Alternative A. So, you can conclude from that the impact of the discharge, or increased discharge on the Spokane River all the way down to Long Lake, downstream would be slightly less than

Alternative A.

The land disposal of North Spokane's wastes would eventually affect Spokane's aquifer on the northwestern portion of the aquifer. But, the disposal is over the area designated by EPA as the sole source of drinking water supply for Spokane, so that would be an environmental impact and contamination to the aquifer. It's also possible that eventually the percolating wastewater would get into the Little Spokane River, which in turn feeds into the main Spokane River. And, the disposal facilities themselves would adversely affect the present open space nature of the Butler Parkway area, so that there would be some aesthetic impact from that type of operation.

Alternative D, which is a separate treatment for both North Spokane and Spokane Valley, would be a combination of what I have just mentioned earlier, Alternative B and Alternative C. You would have the Felts Field discharge, and you would have the North Spokane land application which eventually would affect the Spokane Valley Aquifer and the Ruther Parkway. The cost of Alternative D was about $35 million higher than Alternative A.

Alternative E, which is land disposal of County wastewater at Ruther Parkway, again it's in the north part of Spokane, would have similar but proportionately

greater impact from the land disposal operation on the aquifer in that area. You would have a larger volume of water being disposed of through the gravel in that part of the aquifer.

Alternative F, which is land disposal of all City and County wastes downstream into Stevens County, we are talking about $40 million greater than Alternative A. It would take about 700 acres of open space land for the treatment and infiltration facilities; but, it would remove most of the wastewater influences from the Spokane River, with quality benefits to both the river and Long Lake. This would benefit the use of the river and remove public health and aesthetic concerns.

Finally, the no-action alternative, which is do nothing, would have no immediate capital cost for wastewater facilities obviously, and the only waste discharge increase to the Spokane River would be from the City's own expansion, or from Liberty Lake Sanitation District Treatment Plant; but you would have a continuing problem of the Spokane Valley Aquifer, of the existing septic tanks out there with no action. You would have a continuing problem and potentially a significant problem in the future with the drinking water supply over the aquifer on the on-site disposal.

Now I am going to briefly touch on the supplemental subalternatives that Bruce mentioned, that are really suboptions of Alternative A. And, we don't have a detailed analysis of these alternatives at this time. I will give you a survey, a quick sketch of some of the things that we came up with in the last week that we are considering about these subalternatives.

Alternative A-1 is seasonal phosphorus removal. Under this option the increased discharge of nutrients to the river would increase algae production both in the river and downstream impoundments. This includes Long Lake and the Spokane arm of Lake Roosevelt.

Preliminary information presented in the Wasteload Allocation Study indicates that the algae levels would eventually exceed--that report identifies a desirable algae level--and Bruce again went over the costs. If that phosphorus removal occurred in seven months rather than twelve, the and O&M cost savings is projected to be about $565,000 in the year 2002. The other water quality and fisheries impacts associated with Alternative A, in terms of ammonia toxicity and chlorine toxicity, and so forth, would be similar in A-1 as in A.

A-2, which is the seasonal storage option, has two suboptions: either power production, or land irrigation. Mostly it requires construction of a dam and reservoir in Old Trails Canyon in West Plains area and

those sites are identified as suitable for that purpose in the Corps of Engineers study; and the wastewater discharge to the river would remain at current levels unless power generation was adopted, and then all flows above 32 million gallons per day would be discharged back to the river after the secondary treatment, during the five-month power generation season. This would be basically in the winter months. And, this eventually would generate up to about 30 million gallons per day back into the river after the power generation occurred. And, power generation estimates were somewhere between 1,000 and 2,000 kwh of electricity, but would also require sizeable energy input to pump up to the storage area in the first place.

There hasn't been a major analysis of the cost ratio of pumping it up and letting it run back down, at least in terms of energy.

If the crop irrigation suboption of A-2 were implemented, you would have--I forget the amount of waste flows from Spokane--going to irrigation of crops in the airport area. This would be beneficial wastewater, and would augment the scarce water supplies in the West Plains area; a group capital cost ranging from $13 to $40 million from power, or land irrigation.

Subalternative A-3 modifying the Spokane Treatment Plant to meet water quality criteria. If you went through effluent filtration to reduce phosphorus load from the plant, it would cost about $10.9 million. This would be consistent with what the Wasteload Allocation Study identified as maintaining an average chlorophyll concentration of about 10 micrograms in Long Lake. This is fairly similar to what Long Lake is at right now.

If the phosphorus removal is not increased as the Spokane Treatment Plant discharges increase, there will be a gradual increase in algae standing crop in Long Lake.

The second treatment plant modification we looked at was dechlorination at a cost of about $360,000, and what this would do is reduce the chances of occasional fish hills in the river that might occur from high chlorine residuals and concentrations in the river, especially during low flow periods, and warm periods in the summer months.

And, similarly, the ammonia removal process could be added to the plant for about $1 million, and would have the same basic goal in mind of producing less toxicity in the river, and would benefit the fish population in the river.

Alternative A-4, lake treatment. There haven't been any detailed costs or operational plans developed for that yet. Bruce mentioned what they have been thinking

about: the chemical treatment, some modification in the outlet structures to the dam down below. But, there really isn't sufficient information right now to do much as far as determining the impact of that particular plan.

A-5--water quality management strategies. Bruce mentioned the phosphate soap ban and so forth would all be aimed at reducing phosphate levels in the river, obviously to benefit the water quality situation in the river downstream, in the City of Spokane.

I think that is about all I will say now, other than the fact that the final EIS is going to give more detail to the mutually developed suboptions that we are talking about here at the last of the meeting. It will be covered in more detail in the final EIS.

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LISA CORBYN: We will proceed to the second part of the hearing, which is to take oral testimony and get your comments. Again, I would like to ask that you come up and state your name and address, and if you have an affiliation, your affiliation. I will go down the list. If anybody would like to make a statement, please talk to Charlie in the back, and he can bring up the card to me. Again, the court reporter has asked that we take a recess at about 9:00. So, we will comply with his request, and if we are not completed by then, we will take a short recess and come back and continue with the testimony.

And, with that, I would ask for Glen Yake.

GLEN YAKE: I am Glen Yake, Manager for Engineering, for the City of Spokane, 303 City Hall, Spokane, Washington 99201.

Thank you for the opportunity to present the City of Spokane's views concerning the subject of the wastewater management in the greater Spokane metropolitan areas. We will limit our presentation to the broad conceptional ideas that are embodied in the County's 201 study. In the late 1960's, the City was advised that it's upgraded primary treatment plant was inadequate and increased treatment to secondary level was needed. The final order required not only secondary level treatment, but 85 percent phosphorus removal.

The City proceeded with State and Federal financing assistance, and built its present treatment plant. Additionally, we were told that we now had a regional plan which would be capable of serving areas outside of the corporate boundaries. The City then proceeded to invest $50 million of the local, State and Federal funds to produce this mandated regional advanced wastewater treatment plant.

Meanwhile, the County was faced with a reoccurring problem in the metropolitan area, and the County prepared to attack the problem in the metro area north of the City. The plan contemplated a County-owned collection system with a treatment at a site along Ruther Parkway. However, two actions showed this work.

First was the previous declaration that the City's wastewater treatment plant was a regional facility. This, the County was told, meant no Federal funds could be spent to build another plant in the area.

Second. During the preparation of the County plan, EPA had declared the Spokane Valley/Rathdrum Prairie Aquifer a sole source aquifer. Since the boundary extended north of the Little Spokane River to the proposed land treatment area along Ruther Parkway, it was not acceptable. These actions by the Department of Ecology and the Environmental Protection Agency encouraged the City and the County to enter into an agreement and conduct the study here.

As a part of this work, the City and the County entered into an inner local agreement for the City to provide sewer service to the County under a mutually satisfactory condition.

All of these past actions have been at the prompting of the Department of Ecology and the Environmental

Protection Agency in a mutual effort to protect the surface and the ground waters from contamination. The City has participated in the 201 Study with the County and concurs in the recommendations of the report. A disturbing action, however, has come about in the last two months that has a great potential for eliminating the benefits to be derived from the City and County's inter-local agreement: This is a publication of the Department of Ecology of the Spokane River Wastewater Allocation Study.

A channel view, or a careless interpretation of the study could lead one to believe that the City will have to place a moratorium on new sewer connections through its sewage system. If this interpretation would prevail, there is no way for the County to connect to the existing City's system.

The only other apparent solution is either a multi-million dollar addition to the treatment plant to increase phosphorus removal efficiency above the 85 percent level, and/or even a more extensive construction of the land disposal system. Both of these alternates appear to be beyond the range of financial capability.

The City urges that the EPA and the DOE focus its attention on the Spokane Valley/Rathdrum Prairie Aquifer. The impression that one gets from reading the River Allocation Study is that the Department of Ecology

has spent a considerable time and effort in evaluating the Spokane River quality to the exclusion of the aquifer. The City is gravely concerned that the River Allocation Study not only places the protection of the aquifer in jeopardy, but also threatens the City/County cooperative spirit and the recommendations of the 201 Study being considered here.

The City recommends, therefore, that the Department of Ecology and the Environmental Protection Agency approve the Comprehensive Wastewater Management Plan and place the design and construction of the facilities outlined by the State and Federal priority list. This will allow the area to jointly and rapidly proceed on a development plan towards protection of both the Spokane River and the Spokane Aquifer. If approval is not granted, the opportunities for meaningful progress will be diminished. Years will pass before citizens of this community will be presented with an opportunity to support or reject a program as well conceived, described, reasonable and tangible as the one before then now.

Thank you.

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LISA CORBYN: Thank you. I would like to ask Larry Esvelt to come up here.

LARRY ESVELT: Thank you. My name is Larry Esvelt. I reside at East 7905 Heroy Avenue in Spokane, 99206. That is in the Spokane Valley and near the City of Millwood. I am the owner of Esvelt Environmental Engineering, and I was fortunate to have participated in the Water Quality Studies of the Spokane County 208 program, which addressed water quality management for the Spokane Valley-Rathdrum Aquifer.

I would like to at this time just remind everyone that the findings of the study were essentially as follows: One, that the water, the surface water and water that applies to the surface of the ground over the aquifer does percolate to the Spokane Aquifer. It carries with it a pollutant of any kind that is placed or disposed of on the land's surface.

Secondly, that the Spokane-Rathdrum Prairie Aquifer has degraded from its original quality based on comparison of historical data with data acquired during the 208 study, also based on variations both laterally and vertically of water quality within the Spokane-Rathdrum Aquifer.

Thirdly, that we concluded that the predominant degradation of the Spokane Aquifer was occurring because of urbanization and urbanizing pressures.

Fourth, a significant quantity of the pollutants

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from urbanization were incorporated into sanitary sewage which is disposed of over the aquifer through on-site disposal systems.

I would like to present now a couple of new findings that were not available, incidentally, for preparation of the EIS, which is under consideration tonight, based on ongoing monitoring data that has been acquired by the Spokane County Health District. A comparison of trace contaminants indicates a further degradation of aquifer water quality in two comparative areas. One, the ongoing monitoring data compared with data acquired by the same laboratory from the same wells. The laboratory that conducted the test was the Department of Social and Health Services' laboratory in Seattle on the ten comparative wells at comparative times of the year. All of the mean values for nitrate nitrogen have increased between the two sampling periods. And, these sampling periods, incidentally, were 1971, '72 to 1980/81. Those are the periods when the DSHS samplings were run.

Eight of the ten were slightly greater at the 80 percent level, and six of the ten were slightly greater at the 90 percent significant levels.

Conductivity. Nine of the ten wells showed an increase of conductivity during these comparative sampling periods; seven of the ten had greater than the 30 percent significance level; and six of the ten, again, greater than the 90 percent significant level.

Secondly, the data was compared with the 208 data taken just two years earlier. There were eight comparable wells compared at the same time of the sampling during the year. Nitrate nitrogen increased in six of the eight wells, and four of the eight increases were greater than the 30 percent significance level.

During the 208 Water Quality Studies one well was taken out of service because it exceeded drinking water contaminant drinking level, and that was detected during the 208 water sampling. Since that time an additional well has been taken out of service, and the municipality that owns it is in the process of replacing it now. Both of these wells are in what is called the West Valley area in the vicinity of the cross-section from Millwood to Dishman.

The aquifer is at a depth of approximately 40 feet in this location. The implication is that the pollutants are breaking through the overlying alluvium into the aquifer in our current time frame.

Incidentally, the Panhandle Health District recently closed a well in the City of Rathdrum for exactly the same reason--that the increase of pollutants have taken it beyond the drinking water standards.

Referencing the EIS under question, I would like to concur with their summary under the no-action impact, that the aquifer water quality has degraded and will continue to degrade with no-action alternative. I concur with the assessment that the proposed sewering effort would create a positive change in aquifer water quality.

The EIS indicates a negative impact on the Spokane River quality especially in the Long Lake area from the loading of phosphorus. The loading of phosphorus has increased. I would like to reinforce the cautions that have already been placed and will be placed tonight on misinterpretation of underlying assumptions that were placed into the Wasteload Allocation Study to derive this conclusion.

I had a long and very gratifying relationship with a citizens' committee that was seated to review the 208 program, and to come up with recommendations based upon the 208 findings. I would like briefly to summarize some of their actions, especially with reference to the particular items in question tonight. They did address the relative priorities for water quality in the Spokane area, and in my interpretation unequivocally expressed themselves that the aquifer, which is the drinking water for the area, to take priority over other waters in the area, although they did express concern for an overall environmental quality for the Spokane area.

Included in their recommendations were the following: One, that no further degradation of ground water quality occur. Secondly, that the control of known and potential sources of pollution to the Rathdrum Prairie, the Spokane-Rathdrum Prairie Aquifer, be a means of controlling the aquifer quality.

Specifically, they recommended collection of all sewage and treatment so the discharge of pollutants could not enter the aquifer. Further, that this be accomplished through development of a central sewer planning and sewering of all areas that are urbanized was recommended. For the Spokane Valley area specifically, they called for central sewer planning; that interim industrial, commercial, multi-family, multi-residential wastewater facilities be intercepted as soon as possible; that new developments be provided with sewer connector interceptor systems; and that all new and increased sewage discharges to the Spokane River upstream of the recharge area for the aquifer be banned.

Finally, they recommended that the means for implementation of sewering existing single-family residences with on-site disposals be the initiation by governmental entities for action by the homeowners to conduct their own sewering opportunities, in other words through

the LID process.

As a most recent action, the Citizens Representative Corps Committee, which was comprised of residents of the Spokane area, and that occupied a wide-range of interests and a wide geographical distribution that covered almost the entire metropolitan area, including Idaho-- they recommended in February of this year, or they resolved rather, to confirm their conviction that drinking water quality should take the highest priority among alternatives considered in the Comprehensive Wastewater Management Plan, and that the recommended alternatives of sewering the aquifer sensitive area should be implemented in a timely manner as possible.

That concludes my statement. Thank you.

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LISA CORBYN: Julie Coelho.

JULIE COELHO: My name is Julie Coelho. South 2406 Timber Lane in Veradale, and I am speaking for the League of Women Voters.

The League of Women Voters wishes to commend the different agencies on their prompt action in developing the 201 Wastewater Management Plan.

2 However, even though we view the aquifer protection as a high priority, we feel we must bring up two

2 other concerns. The first is the lack of any regional solution to this problem between Idaho and Washington. Neither State can protect this valuable resource alone, and we urge a two-state agreement before a sewer plan of this magnitude is approved.

3 The second concern is the sprawl projected over the aquifer in the Generalized Comprehensive Plan. As the Land Use Plan has no mechanism to contain development to fill in areas--possibly the Wastewater Management Plan should contain ways to accomplish containing sprawl. We base this feeling on the time lap already experienced in the North Spokane Sewer Plan.

Again, we commend you and hope you will improve the plan by using our two suggestions.

Thank you.

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LISA CORBYN: Joan Honican.

JOAN HONICAN: My name is Joan Honican, South 3904 Bowdish Road. I did prepare a statement, but I think it's probably too negative based on my experience in Spokane County to even submit or subject this audience to. So, I'm going to submit it for the record.

I have attached numerous questions, documentation of local atrocities. I think that this will help fill the

gaps in some of the local data that was missing in your EIS. And, with that, I will save my questions, I suppose, for the question session.

Thank you.

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LISA CORBYN: Joanne Vennema.

JOANNE VENNEMA: My name is Joanne Vennema, 930 East 19th in Spokane 99203; and I came tonight to speak just as an interested citizen who, over a long period of years, figured it out--34 years--and has been very concerned about our aquifer and the protection of it, and have seen the actions in this County move, to my mind, very, very slowly, but it is moving at this point, and we have come up with a Wastewater Treatment Plan which I feel is well thought out, and adequate, and should move to implementation as soon as possible.

4 And, I would like to second Mr. Yake's statement to ask for your approval as submitted, and to place it high on your developmental list so that we may get on with the business of protecting our resources of our drinking water, and to handle our other problems which have been presented.

So, I am a little, should I say, suspicious of some of the data on the problems which have come up at this late date, but that they would be handled in a reasonable manner along the lines to meet our service water quality standards.

Thank you for your attention.

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LISA CORBYN: Sally Reynolds.

SALLY REYNOLDS: I am Sally Reynolds, Route 2, Box 776, and I am speaking on behalf of the Glenrose Association. The Glenrose Association represents more than three-fourths of the homes in the Glenrose community. We have been formally organized and involved in the land use issues for nearly ten years. We have traditionally supported the well-planned growth and protection of resources, including ground water quality.

I have a question to ask. I did not realize tonight's hearing would be on the sewer plan as well as the Draft EIS. Do I submit written comments on the sewer plan to the same location, the same address, Region 10, in Seattle?

LISA CORBYN: Yes.

SALLY REYNOLDS: Thank you.

LISA CORBYN: If there are other places the EPA needs to get them, other appropriate people, we will forward them.

5 SALLY REYNOLDS: thank you. I would like to

5 mention before I make my comments that I had a great deal of difficulty in obtaining a copy of the Draft EIS. It is not at the Public Library. I wrote in early April and was informed that I could find it at the Public Library, or I could contact Tom Mosier. I contacted Tom after several phonecalls to ascertain that it was not at the library. Their copies were in short supply as well.

Copying costs would have been approximately 10 cents a page that size. I was finally able to borrow a copy from one of the planners, but I do have two suggestions for public officials to avoid this kind of thing in the future.

I would like to suggest that you keep a current list of interested groups and individuals; and, two, offer them the opportunity to order publications at cost, prior to printing perhaps, with notification through a postcard even prepayment.

Now, with regard to the Draft Environmental Impact Statement itself, there are numerous areas of concern and conflict that are identified, and many appropriate and sound mitigating measures are suggested. There appear to be some gaps that I have questions about, 6 however. One, the failure of the DEIS to mention the City of Spokane Doyle (phonetic) Report is puzzling to me in view of the acknowledged commitment to sprawl in

6 both the Spokane Conference Plan and the 201 Plan. The additional suggestion of growth and utility extension in the West Plains area adds a significant dimension on the land and utility commitments, and economic considerations.

7 Interrelated matters. Secondly, the alternative of encouraging growth to the west and discouraging growth over the aquifer area, which was suggested by some professionals in response to the County's Comprehensive Plan is not addressed at all, and it's disappointing that this alternative has not been suggested or explored in the DEIS.

8 Three. The Draft EIS only addresses briefly the broad economic considerations that accompany the 201 Plan. Under the proposed sprawl plan the ultimate economic burden on taxpayers after lateral hookup fees could be enormous. This is especially important in view of the overcommitment to low residential growth, since it's widely acknowledged that such growth does not pay its way in terms of supporting the local governmental services.

9 And, four. There is no mention made of the life expectancy of the system. I have always understood that such systems do have a limited life expectancy, after a period of time seeps begin to occur.

Now, my comments on the sewer plant itself. With respect to the Glenrose community, the Draft EIS

correctly points out on page 142 that there are conflicts between the priority sewer service area and the County

10 Glenrose Plan. The Draft EIS suggests that these areas be left out of the PSSA. The Glenrose community strongly concurs with that suggestion.

We believe--and these are general comments on the plan--we believe that the 201 plan as it now stands needs to be sized down and tightened up to be politically and economically acceptable for consideration as a bond issue. Among the most important reduction of sprawl and PSSA size, consistency with the County Land Use Plan by changes in both the 201 Plan and the Land Use Plan as necessary, consistency with the stated goals of both the County Land Use Plan and 208, better coordination between the governmental entities, particularly the City and the County, and the State of Idaho, measures to protect prime farmland and provide adequate, open space, and recreational land and other amenities, and also means of protecting aquifer water quality from contamination.

Thank you.

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LISA CORBYN: Thank you. We have about five minutes to 9:00, and what I would like to do now, rather than going on with comments, I would like to call about a 10-minute recess to give the court reporter a break, and then we will come back.

(After the recess the public hearing continued.)

LISA CORBYN: I would like Margaret Portman to come up and give her presentation.

MARGARET PORTMAN: I am Margaret Portman. My address is East 13503 - 28th Street, 99216.

I have served on the Citizens 208 Committee, on the 201, and the Wastewater Allocation Study for the river, so I have been to more meetings on this subject than I can probably recount. Needless to say, I was one who approved the selection of Alternative A in our citizens committee, thinking this is the way to go.

One of the things that I thought was the most heartening was in reading the EIS statement on page 149. There is a very significant statement:

> "The wasteloads in urban runoff can be just as damaging to surface and ground waters as sanitary wastes if not properly managed."

And, this is further developed in the EIS. It explains that the 208 recommendations which are contained in full, in Appendix C, and are part of the recommendations that our 208 committee worked long and hard on, and that these

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should be implemented. My feeling is that while I am wholeheartedly in favor of the sewer plan, I think this should be concurrent with it; that we do need protection for the urban runoff because it can be just as serious a problem. Many people are even speculating at this point that the sewer in the Valley will bring an influx of people which we really hadn't anticipated, because it will be a help to the developers; and therefore the problems of urban runoff will probably escalate at a very, very rapid rate. And, we need to think in terms of all of the measures that we possibly can take--probably a collection system and disposal of urban runoff isn't even a reality, but there are measures that are suggested in the 208 management recommendations, and these certainly should be put as a requirement along with the sanitary sewer.

I think one of the things that one of us who served on the 208 citizens committee was most proud of was the fact that very early on the citizens committee was the one that came out in favor of the nondegradation goal for the aquifer. We worked long and hard on the wording of this, and we adopted this as a goal against which all of our recommendations and all of our decisions in the management plan were evaluated.

This certainly should be kept uppermost. In fact

I think one of the most disheartening things I felt when I attended the ground water hearing in Denver in January listening to the head officer say that EPA had devoted about 90 percent of its time, money and energy to surface water, and now they realized that 50 percent of the people in the country drink ground water, and suddenly we haven't done the study on ground water that we should have done. We are ready and willing to do the job to protect this valuable ground water here; but, we do need some help, and part of it is the necessary ongoing testing and that kind of thing that has to be done, plus the protection from urban runoffs, spills, storage of critical substances, and all that kind of thing. And, we feel--and I think I speak for the 208 committee in saying--that our greatest concern is that we hold this nondegradation goal high in all decisions that we make.

Thank you.

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LISA CORBYN: Dan Knierim.

DAN KNIERIM: My name is Dan Knierim. I live at 4130 Sundown Drive in the Valley, and I am not here representing any particular group, although I am affiliated with several.

I have just a few spoken comments to make, and I

would like to submit a written comment after I get a chance to look at the Draft EIS, which I also had trouble finding a copy of.

12 I think the studies and the proposals have been well thought out within the limits of alternatives that they started from, but it seems to me that there are several occurrences that were not considered that I would like to see considered. One of them is to restrict the priority sewer service area to a smaller piece of the Valley in particular, and to restrict the development outside that area, either simply banning further on-site disposal, or requiring possibly high-intensity or high-level local treatment for developments outside the area of sewering, or possibly incorporating the possibility of composing toilets of the nonsurface disposal by biological disposal.

13 And, I also think that composing toilets could be considered as a possibility even within the sewered area, within areas that currently would need sewering just due to the existing density in order to reduce the necessity for sewering.

14 I aslo think that part of the proposal could be to skip the future density. One of the impacts of the proposal is to encourage development, low-density development over the sewers areas, in particular over the Valley rather than over the West Plains because that wouldn't be

14 sewerage until later. Perhaps the sewering could be accelerated over the West Plains and combined with restricted sewer area over the Valley.

That would end my spoken statement.

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LISA CORBYN: Tom Rogers.

TOM ROGERS: My name is Tom Rogers, East 10820 Maxwell, 99206.

I am probably 150 years too late on this. I apologize for that. I had no control over it. I have the firm belief that if biologists had designed our sewage system in the first place, we wouldn't be talking about any of these plans here at all. Unfortunately, somebody else designed it. I don't know, I understand even the Romans had a system like this, although we are kind of copying the Romans, even though the Romans disappeared somewhat after the dinosauers. To meet our present means of handling sewage just doesn't make sense biologically, ecologically if you wish. It's grossly wasteful of resources. There should be no such thing as wastewater. There should be no such thing as human waste. I don't mean that we shouldn't go to the bathroom, I mean these things are resources. It's no wonder that we are running out of fertilizer. The farmers scream at the high

cost of fertilizer. You know where the fertilizer goes. It goes down the toilets, that's where it goes. That's where it is.

A couple of nights ago this program here on channel 2, about these new ideas. He was talking about building these living places out in space, orbiting the earth, you know, because we are running out of space down here, you see. He is going to build these whole living communities out there, but he says everything will have go be recycled, obviously. Everything will be recycled. Well, even industrial waste instead of throwing them down the sewers--someday we will have to recycle all of those and reuse them. But, I bet we don't. I bet we throw them away. And, of course, an awful lot of them are toxic.

As far as the wastewater and the human wastes, which are resources, are concerned, we take one resource, water, mix it with another resource, human waste, transport the two of them many miles to an expensive sewage plant, separate both, and throw them both away. To me, well, to put it mildly, it just doesn't make sense.

I mentioned this thing here several months ago at a previous hearing of this. I don't expect it to make any impact on the way we do things, but I do have to speak out anyway, because I think the whole system as we have gotten into it, it just doesn't make sense. However, I think I am just a voice crying in the wilderness, if you will forgive the expression. I don't expect to be listened to. I am rather synical about it, but I really think that I'm not the only one in the world that thinks this way by any means, and I'm not an authority on it by any means.

Sweden has not put a man on the moon, but Sweden has a legal composting toilet over there, and in some places in this country it is legal. I understand in this county we can get a permit if there is no other way available, we can get a permit, and there are a few existing in the County. Dr. Gibson of Eastern Washington University Biology Department--I talked to him a couple months ago about it. He had some experience with them. He made the statement that he thought that we could shift over to the method of taking care of our human waste and it would be considerably less expensive than the sewage system for domestic waste; and then, of course, at the same time it's going to save a lot of water, it's going to save the fertilizer. It should be put back on the land for use instead of being thrown away.

15 So, I would really like to see the County invest a little, the County and City invest some money into looking into this possibility. I would like to see them do a little research on it for a few thousand dollars. They could try this. They could try some of these. Of course, maybe you don't know what a composting toilet is. It's an aerobic system. You depend upon bacteria to break down these so-called wastes. It's not stinky like a septic tank which is anaerobic. It takes place without free oxygen. And, the aerobic process is sealed up so it doesn't smell up your house, and it does not require water. When you get all through with it, you have some fertilizer that you can put on your garden, excepting the difficulty is that since our foods, practically all of it comes from way out in the country someplace, a city is a ecological monstrosity, I guess you might say. It's not self-sufficient at all. So, our food comes from far away. Well, that waste ought to be put back on the soil.

So, I think it would be a more economical way to do it as dry waste than to transport it with millions of gallons of water, and to pump it out someplace. The dry waste should take a very small amount of energy to transport, compared to all that water when we want to pump it out that way.

I think we ought to be at least giving a look at this sort of thing, but we seem to be so committed in our thinking that we don't really want to change. When we look at the big cost of sewering this whole area, the big cost, I think that alone should tell us that there must be something fundamentally wrong in our basic concept of placing all of our waste into one central spot, and then providing water and separating it, and throwing it away. If any natural community were based on that--what if all the deer had to go to the toilet and flush the toilet, and have it all collected in a separate place? My good heavens, you could see how ridiculous it would be. So, I would like to see us look at some other system besides this, which I consider unsound, biologically, antiquated, far too expensive. It's just too expensive in money and resources.

Thank you very much.

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LISA CORBYN: Mauri Hagen.

MAURI HAGEN: My name is Mauri Hagen, 15418 Little Spokane River Drive.

I, like Mrs. Vennema have been at this for many, many years. In fact, long before there were other studies made, why some of us were busy trying to do something about this problem. Personally, I am getting a little weary of talking about sewers, and septic tanks, and cesspools, and so forth. I would like to reach a point where I could talk about music, art, or sex, or something else for a change. But, anyhow, it does seem to be coming to a close finally a little bit. It's getting a little

closer.

I was a member and identified with the organizations that applied to the EPA for sole source classification of the aquifer, and this started the ball rolling really towards doing something about a sewer system. Mr. Rogers just pointed out that we have done lots of funny things, and there are problems that we haven't attempted to solve, but as late as the close of the second World War there were over 4,000 toilets inside the City limits in the capitol city of the world, Washington, D.C. There are a lot of things that you don't like about outdoor privies, but one thing that we are always assured of--we knew where the problem was. We never had any difficulty in identifying the problem. Now we do, of course.

I started with Bruce in the Army Corps study, and I think that was seven years ago, or so, and I don't think that in that period I have missed more than one or two meetings of the Army Corps study, and then the 208. And, I have kind of faithfully hung in there, trying to solve this problem, and trying to bring it to a conclusion so that we can have public health protected in the community.

I also received a copy of the Draft EIS, and I read it, and I have even given it to some other people to read it. And, it was lacking in some respects, and I think Mrs. Reynolds pointed out those shortcomings very well awhile ago. In the Army Corps study they recommended the Alternative A, and we thrashed that out for a long time. We worked on all of the alternatives, and it did seem to 16 be the only viable one. But, some of us fought rather hard against the Liberty Lake Sewer System that is in fact planning to dump its effluent into the Spokane River at a point where there is a number of interchanges in the river and the aquifer from there to Monroe Street. And, I think this is a very bad weakness. I think it could have been addressed very carefully in the EIS. It wasn't. And, I still think we need to take a real stand against the introduction of sewage effluent in the river above the interchange areas.

17 I am certainly opposed to the storing of raw sewage in any gravel pit. My gosh, you might as well put it in our drinking water as well. That's a stupid method of handling that problem. There are gravel pits presently right in the aquifer, and I think that's a very bad weakness, and I think that needs to be spoken to very carefully if you are going to store raw sewage someplace. It should be in a vessel of some kind that's air-tight and clean.

As far as the phosphorus is concerned, I have a feeling that we can have both a low phosphorus content in the surface water and also have a sewage system for the Valley as well. I don't think it's an either or else kind

of thing. I discussed this today with Mr. Armquist. I believe that it's possible to have both.

18 I also have some misgivings about any kind of method of financing this thing, and I'm really kind of concerned about it because I don't see at this point that there are people that are idealistic enough to vote a bond levy for a project that is not presently bothering them. This disturbs me some. I think it needs to be done, and I certainly feel that people should be concerned enough to do it idealistically. In fact, there wasn't even a single person that even gulped when the Highway Department said it would cost $130 million to build the North-South freeway. They weren't concerned enough to holler about that. But, the business of spending $90 million for a sewer system to protect public health seems to be ranklin in the citizens.

I am not going to say any more on this at this time. I am going to present a statement to the EPA.

Thank you.

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LISA CORBYN: Philip Kaufmann.

PHILIP KAUFMANN: My name is Phil Kaufmann. I work for Michael Kennedy Engineers, who was responsible for providing technical input to the Liberty Lake Sewer

District in their response to the Draft EIS. I would like to preface my comment with a statement that we in the sewer district have certainly in the present and in the past supported the general concept of sewering the aquifer sensitive areas. We carefully reviewed the County Comprehensive Wastewater Management Plan EIS and have several concerns. Some of these have been responded to in the Volumes I and II of supplemental studies, so I believe that my comments will still be germane perhaps to a discussion of subalternatives of Alternative A. We have already submitted written, formal written response, and I'll outline three broad areas of concern that we addressed in those comments.

19 We feel that the present condition of the Spokane River is not adequately described in the EIS, especially with respect to toxicants such as ammonia and chlorine and how these affect the river fishery. A brief review of water quality at Riverside State Park, downstream of the present Spokane treatment facility, suggests that the river is not presently meeting designated Class A stream water quality standards.

We feel that the EIS water quality and fishery impact assessment procedures are generally unconservative.

In most of the water quality predictions, the mean river flow (7570 c.f.s.) is used in wastewater dilution

19 calculations. Typically, river flows in the critical summer and fall seasons are near 1,000 c.f.s. for extended periods of time. The impact of the wastewater discharge should be assessed during a time-weighted average flow or a typical summer flow to more accurately depict "average" water quality conditions. The acute effects of toxicants should as well be assessed using dilution calculations at very low river flows.

The effects on relatively nonmobile organisms such as stream insects should be assessed in the zone of dilution during typical flows and low flows.

Our preliminary calculations show that effluent dilution, unionized ammonia, chlorine residual, algal nutrients, and several toxicant concentrations would not be in compliance with water quality standards in the river downstream of the proposed Regional Wastewater Treatment facility.

Because of the method of water quality assessment used in the EIS, we feel that it does not contain information necessary and sufficient to predict floral, faunal and recreation impacts resulting from the proposal.

20 Our last overall concern is that--and this has been addressed I think in the supplemental alternatives--is that we feel that the land application alternates presented in the EIS do not exhaust the possibilities reasonably

20 available. For example, no consideration is given to any options employing summer land application and winter discharge to the river.

Our formal comments have already been submitted.

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LISA CORBYN: Thank you. Skip Toreson.

SKIP TORESON: My name is Skip Toreson. My address is 1513 Lilac Lane, Liberty Lake. I am one of the Commissioners in the Liberty Lake Sewer District, and I was as usual in awe of Phil's presentation. He is most skilled technically, and I don't pretend to be an expert in lake biology or river studies. I am really primarily interested in taking care of Liberty Lake. I have been on the Commissioners Liberty Lake Sewer District since 1973 when it was formed.

I would like to make a couple of comments that are really more from the political point of view and the economic point of view rather than the environmental point of view, although I suppose they have to interact to a certain extent. First of all, and I suppose it's not particularly germane here, but I was upset with Mr. Hagen's comment about the Liberty Lake plan. We have, of course, received commissions from the State and Federal agencies, and local agencies to proceed with our plans,

and we feel that the plant as it's being constructed, and the effluents to be discharged from there is going to meet the highest standards that have been set down, and we will comply with those.

A couple of comments. Speaking for myself, and I believe for the sewer district because we are carrying forth this thought, we are 100 percent in favor of sewers in the Valley. We always have been. We formed a district at Liberty Lake in '73, and we are now completing construction of the treatment plant, which is the final phase of putting all of us together, because we felt it was important, and we felt that if we couldn't do it for the Valley we could at least do it for our low corner of the world. However, I do have a couple of concerns that are follow-ons to what Phil said.

21 I sat on the CWMP Advisory Group, and I stated to that group, and I state here again tonight that I see a serious problem with the economics of funding this alternative the way it's been proposed to be funded. I seriously question that it can pass the vote of the people to fund a general obligation bond, which is the proposed method of funding a portion of this program. I hate to even bring that criticism up, because you should offer some alternative if you say something won't work, and I am not sure what will work. But, I think that the

plan as good as it may be is going to run into some serious problems because of that.

22 The second area I am concerned with, and Phil alluded to this, I think it seriously ought to be looked at, the land application alternative rather than the Spokane River alternatives. The numbers I have been able to look at in my limited ability to perceive these numbers tells me that you can't put up to 60 million gallons of effluent into that river with the kind of treatment ability that we have projected and planned without there being a substantial impact, a negative impact on the organisms of the river. I guess that's the simple way of saying what Phil did in more complicated terms.

I compared some of the things that Liberty Lake Treatment Plant will do when it goes on line early next year compared with what the Spokane Treatment Plant as programmed or existing now will do, and some of the differences for example are that we have dechlorination already planned in our plan, and it's not in the City. We have phosphorus removal plans when the level gets to 80 percent of our million gallon first phase of construction. We have testing both now and after the plant is in operation on the river. We have flow equalization into the plant, which will make the plant operate more efficiently, and ultimately reduce any poor quality that

would result in the effluent. And, as the other side of the coin, we don't have a bypass, that will still exist in the City Plan.

So, while I am on the one hand very, very concerned about sewering in the Valley because I work in the Valley, and I live just on the outskirts of the Valley, I am very concerned about this type of treatment, that is, treatment where you are putting the effluent into the river and secondly the economics of the plan of how to pay for it. And, I just see that politically--I don't think it's going to succeed. And, I am almost embarrassed to say that, because I don't have a better alternative as far as funding. I know it's the devil's problem to do that, because we just finished the final sale of our bonds for our sewer treatment plant, and it was a long, bitter, difficult struggle to get our funding straightened out, and thankfully the State and the Federal government have participated quite substantially in our plan. And, we thank them again for that. But, it's a very, very expensive process. It calls for some real imagination and hard work to come up with a plan that will work.

Thank you.

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LISA CORBYN: Is there anyone who has not given any comments or testimony that would like to at this time, formally? If not, I will put us into our third phase of the question and answer. I would like to say that there is someone here from the Washington Department of Ecology who has offered to respond to any questions from the State's standpoint.

I ask that you address the questions to me, and then I will refer them to particular people.

Would you please identify yourself.

JOAN HONICAN: Joan Honican again. I wanted to know why the urban runoff problem, which is a very serious problem, which was also addressed in the 208 study, is not dealt with in this plan? I feel very strongly that it talks about it, and I feel very strongly that we have to pick up at least at Sullivan Road with the density that is already there, that it has to be sewered, that I think we are only dealing with a small portion of the population. I wish we had the County classification map on the wall also showing what is projected in the way of additional roads over the aquifer. And, I know that this issue was raised earlier, but I can't remember who it was. But, how can we even talk about sewering and protection of the aquifer when it was determined that this urban runoff was a very significant contributor?

LISA CORBYN: I will give that to Bob Wubbena to respond.

BRUCE COLLINS: Just a couple of comments. First, when we approached the study, the project that was handed to us was to come up with a Comprehensive Wastewater Management Plan as it related to the 201 section of the portfolio. A part of the requirement was also to incorporate the 208 findings and proceed on that basis. We proceeded under the premise that there were many different issues as identified by the 208 water quality control study, but that there was no way to deal with the whole program all at one time, and to make progress. It was for that reason we identified the management system within the first phase, or the first step, or major components. So, it wasn't that we didn't recognize the importance of the water management and storm facility program as identified in the 208 water management program, but it's a matter of how you get from where you are today into a program that is going forward. So, the management system and the administrative system that we outlined here, the County and the City has basically endorsed the program. I would like to point out one key component related to that because there are some comments that were raised areas that were covered or identified in the panning water project as low density, and should not be included in the--. It is very,

very important for you to review and look at the management systems and how the management decisions are intended to be made because in that system it is recognized that the land use decisions that have been made now will be made and will constantly be made by the local government structure. And, it doesn't mean within that sewer area is going to be (inaudible). We believe that the management system that we have outlined here can proceed to address the storm water program in the sequential fashion along with it.

That is how we approach the problem, rather than trying to solve all the problems identified in the 208 study all at one time. We are trying to put the system into motion and pragmatically deal with those issues.

ALICE MILLS: If you marry the two systems, one or the other has to prevail. In reading the draft EIS, I didn't really get a feeling of how those two were to be merged.

BRUCE COLLINS: The reason I hesitated to a certain extent is because I'm not sure if you are asking a question about the EIS or the plan. As everyone in the room recognizes, as a development occurs in the undeveloped areas of the City or County, various decisions will be made by government in terms of long use, whether residential now, and going to commercial, or many different

changes occur. Our charge was not to make planned policy decisions, but to try to prepare a planned program that responded to the decisions that will be made. So, since there will be changes made even as we develop the plan, the plan is under evolution, we attempt to set up a decision making process for providing utility services, and then when local government makes a decision, then a particular piece of property to be of a certain density would require a certain type of wastewater management. We cannot get down to specific lot-by-lot decisions, because it is constantly evolving.

Now, there is a marriage there in the decision making process, maybe not a direct marriage in terms of a sewer line and how the land develops, but we felt that that is the more specific decision that will have to be made by local government.

WALLY MATLOCK: I am Wally Matlock of Nine Mile Falls. Is local funding to be a general obligation bond, to be paid for by the whole County: Liberty Lake, Deer Park, Cheney?

BRUCE COLLINS: After the capital improvement plan was prepared and the cost estimates were developed, it was our responsibility to make a recommendation to the County Commissioners as to the approach of financing. We approached it from the standpoint of saying that--many of the issues that were raised here tonight dealt with the protection of the aquifer, and wastewater management, and how that contributes to the environmental economic growth of the area--and we felt that using a general obligation bond was one approach, and in our opinion is a very desirable approach. If the County Commissioners decide to accept our recommendation and present a general obligation bond issue to the voters, then it would be Countywide.

WALLY MATLOCK: Then the City people would vote themselves a bond to support the Valley?

BRUCE COLLINS: Yes. This is our recommendation based upon the rationale that I touched on briefly. What the County Commissioners and the City people have done is they have appointed a citizens committee to now take a look at our recommendation, which they may reject, modify or whatever the case may be, to make a final decision as to how they would like the capital improvement plan. They may choose not to follow the general obligation bond, and they may go to a different route of financing. But, this is now being looked at by a broad section of the citizens group to say how do we best meet this need, and our recommendation was the general obligation bond, but that has not been the final decision of the County Commissioners at this point in time.

AUDIENCE MEMBER: He indicated that they would handle the storm water problem when the development took place. The storm water is a problem today just like the sewer problem is. They are both exactly the same. It contributes to the quality of the water right now in a high percentage, not as high but nearly as high as a percentage of the problems as the septic tanks do, and it's a present problem. It's not one that develops as time goes on. I would like to have him comment on that, because this is the answer. You can't project it in the future. It's here.

BRUCE COLLINS: My point is that we recognize it as a problem, but because of the high cost of whatever solutions we see, what we are saying is that you need an effective, implementing water management system to attack the problem. We are not trying to avoid it, we are saying we have to have the system going before we can effectively manage the program. I am not trying to sidestep, it's just our recommendation of how you approach the problem.

WALLY MATLOCK: That is exactly the position the City took 60 years ago, and now we are faced with the same problem. How do they finance the storm water separation?

ROBERT WUBBENA: I would like to respond to the last two questions. I think as far as the runoff issue it has been identified and quantified in terms of the environmental impact within the river system and so on. You may recall that the testing that was done at that time concluded in general terms that the water quality impact from the runoff was roughly of a magnitude of one-fourth the water quality impact from the advance wastewater treatment--. So, we are recognizing that we are not dealing with something that is not of great magnitude. I think we hear so much about the runoff impact. It is true. At certain times we are getting a fairly high concentration relative to what we have in the sanitary sewage, but in terms of total pounds contaminants over the years, it is a much smaller problem, and it's a much more technical problem to deal with. It happens on a certain basis. We can't treat it with filters, we can't treat it biologically but it has been dealt with and there have been increasing studies encouraging over-land slope flow, and this type of thing, recommendations for good housekeeping, street cleaning by vacuum method, and so on. It is also not a public health problem.

Back to the previous question, in terms of the general obligation bond financing, we realize that the major problem of the City of Spokane is the urban runoff. One concept in a Countywide bond issue, the County doesn't have any choice, they can't go to a general bond just for

the Valley or the North Spokane area. Politically they do not have that choice. The second problem is the allocation of the proceeds of the general obligation bond issue where revenues would be earmarked to be applied to City problems. Certainly everybody has a problem. And the general obligation bond is looked at as something that coul generate the funding basis for local funding for each of the communities--Medical Lake, Cheney, and others that have a localized problem, on the basis that it would not deny the County the opportunity to utilize earmarked funding for their particular problems.

LISA CORBYN: Any other questions?

JOAN HONICAN: I have a whole series if no one else does. I wanted to know if there is a backup funding plan that was contemplated or considered if the GO bond were voted down, which most of us expect, or if the State is not able to give the amount of funds that is contemplated for a financial package. What would be your backup funding to finance? What is the machanism?

BRUCE COLLINS: The program is looked at in two different structures: The GO bond and the ULID bonds, or financing through the ULID. So, we have looked at both of those, which are basically the normal approaches to financing. And, another option that exists, and one of the considerations that we gave in Alternative A, we have recommended Alternative A with the Stage 1 sewering program. If either of those two financing methods are not endorsed to the degree that we have recommended to the Stage 1 level financing, the other option that is available to the County and the City is to reduce the Stage 1 program to a smaller scale.

So, my response is two things: Number one is that if the GO bond approach is not selected or is not endorsed by the voters, the other option is then going to be ULID financing, and/or a reduced phase program on the first stage of the construction program. Those are the options available to the City and the County, and they are really the only options available.

AUDIENCE MEMBER: One of the things that I am wondering about since funding is such a great issue, and I don't think I have heard it addressed, what do you think about private industry taking over your treatment plant?

BRUCE COLLINS: I don't think that I am really the person to respond to that because I think that that is a management decision at the local level. I would presume, and this is a personal opinion, that if private industry could achieve the objective at a lesser cost, I think you would have a good client here in Spokane County. I think that is the only response I can give you.

LISA CORBYN: We don't have anyone from the

County on the panel. If he doesn't want to respond to that I suggest you call him at a later date. You do not want to? I would suggest that you contact someone in the County.

MICHAEL KENNEDY: I am Michael Kennedy. I am a consulting engineer as such for the Liberty Lake Sewer District. And, I would like to make a comment as to the comment Bruce made about the problem that seems to exist with the storm drainage as a public health problem. I strongly disagree with that. I think there are significant health effects accruing from the discharge of storm water drainage into areas that might seep into the aquifer. It does pose a public health hazard.

The District, as well as planners for the District recognize (inaudible). We have developed and are developing very substantial water management plans that are going to be put into effect. There are, after all, finite development limits not only for Liberty Lake, but also for Spokane County. There is a finite capacity for the aquifer to accept the waste. There is a finite capacity for the river to accept waste, and I think that needs to be acknowledged early on for any suggested solutions for a single problem. Thank you.

LISA CORBYN: Any other questions?

23 JOAN HONICAN: I have another one. In reading the Draft EIS I was impressed with the fact that you

23 didn't have a copy of our recently adopted Land Use Plan, and the input Chapter 10, which is supposed to protect the drinking water of the County. I understand that there has been a little correspondence going back and forth to that effect. I don't have copies of any of it. But, one of the major points I wanted to make is that there is a terrific interrelationship between the 208 study, the classification map, which is an absolute atrocity, and the 201 plan, and if these are all not looked at and how they interrelate, we wind up with an inadequate EIS. And, based upon the information we had, we put that document together.

24 (Inaudible) I think it is very important that we go back and amend the Draft EIS at this point so that we have a chance to submit comments, because I see the Draft EIS as being totally inadequate to today's situation in light of the new information that we have. When I walked into the meeting tonight, I was given a copy of Summary II. I haven't had an opportunity to read it, so obviously I can't comment intelligently on anything that has been done.

We have to have some time in the community, because we are talking about the largest capital outlay we have ever contemplated, and some very strong environmental implications for our children, our grandchildren, and generations to come.

I would like an opportunity to deal with the

24 phosphorus data reflected in the amended DEIS. Is there any chance that we can get some more time, and to amend the DEIS?

LISA CORBYN: I suppose I am the appropriate person to respond to that, and I don't have an answer for you right now. A schedule has been set for processing the Draft EIS, but based upon comments that we have received, the process could change. I would like Michael to respond initially to the question about the Comprehensive Land Use Plan and revisions of data.

MICHAEL RUSHTON: In the last stages of the production of the Draft EIS we learned there was a new addition, and we have since received that new addition along with a list of comments from the County on the DEIS that reflects the changes that have occurred in their planning. And, our process would be to take those comments and also take the changes that have occurred in planning, and discuss those in the final EIS in depth, and in as much depth that we feel necessary to respond to the comments we have received, and those changes, and that document is a public review document also, and it will be submitted to the public for comment.

LISA CORBYN: I would like to say that we do have a process that if new information does come up in the EIS process and we have gone through the steps of issuing a final for public review and comment, we do have a process called the supplemental draft, which would take that additional information, with new information, and put it into the decision making process, and that supplemental draft would also go through a similar public review and comment period.

Are there any other questions? If there are no other questions, I think I will adjourn the public hearing at 10:15. Thank you all very much for coming and participating.

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Response to Oral Comments

Glen Yake

1. Refer to Chapter 3 of this report for EPA's recommended action on the proposed project.

Julie Coelho

2. Refer to Response #1 in the "Response to Comments from the League of Women Voters of the Spokane Area" section of Chapter 4.

3. Refer to Response #2 in the "Respone to Comments from the League of Women Voters of the Spokane Area" section of Chapter 4.

Joanne Vennema

4. Refer to Chapter 3 of this report for EPA's recommended action on the proposed project.

Sally Reynolds

5. EPA regrets that there was difficulty in obtaining a copy of the Draft EIS. Copies were mailed to the city and county libraries in Spokane. EPA attempted to contact all interested groups prior to issuance of the Draft EIS; persons attending the two public workshops on the Draft EIS were asked to submit requests for copies of the report prior to its publication. We are sorry that the Glenrose Association was not placed on our mailing list.

6. This comment is addressed in Response #2 to the Glenrose Association letter of comment (Chapter 4).

7. Refer to Response #3 to the Glenrose Association letter of comment (Chapter 4).

8. Refer to Response #4 to the Glenrose Association letter of comment (Chapter 4).

9. Economic and Engineering Services, Inc., indicates that all pipelines will have a life expectancy of 50 years, as will the equalization basins. Pumps will be expected to last approximately 30 years (Maxwell pers. comm.).

10. EPA's recommendations and conditions for issuing grant funds to Spokane County are contained in Chapter 3. This includes implementing recommendations of the 208 plan.

Margaret Portman

11. EPA has strongly recommended implementation of 208 plan urban runoff control measures. Other measures to limit the impact of growth are contained in EPA's recommendations in Chapter 3.

Dan Knierim

12. Development restrictions both inside and outside of the PSAA are the responsibility of Spokane County. The types of on-site systems that are acceptable is determined by the Spokane County Environmental Health Department and the Washington Department of Social and Health Services. The advisability of using composting toilets should be reviewed with these agencies.

13. See Response #12 above.

14. Refer to Response #3 to the Glenrose Association letter of comment (Chapter 4).

Tom Rogers

15. State and county health agencies are responsible for regulating the use of on-site waste disposal systems. The use of composting-type on-site systems should be reviewed with these agencies. EPA encourages the use of alternative wastewater treatment technology in the interest of conserving water and energy as long as public health protection is not compromised.

Mauri Hagen

16. The Draft EIS discussed the water quality implications of the Liberty Lake plant discharge in considerable detail (pages 42-108). The CWMP indicates that the Liberty Lake

discharge is an interim situation; it is planned to be connected to the regional city and county system by 1992. The implications of increasing waste flows through the Spokane STP have been redefined in Chapter 2 of this report (Spokane River Water Quality).

17. The facilities plan engineers have revised their proposal for constructing a storage basin in existing gravel pits. Their latest plan is to excavate a new, relatively shallow basin adjacent to the Spokane Valley site identified in the facilities plan. They indicate that the double-sealed basin will be able to store untreated wastewater without threatening aquifer water quality.

18. The latest information available on proposed project financing is contained in the Project Economics section of Chapter 2 of this Final EIS.

Philip Kaufmann

19. The Spokane River Water Quality section of Chapter 2 contains a revised water quality impact analysis that addresses these concerns.

20. A seasonal land application suboption is addressed in Chapter 1.

Skip Toreson

21. The latest information available on proposed project financing is contained in the Project Economics section of Chapter 2 of this Final EIS.

22. A seasonal land application suboption is addressed in Chapter 1.

Joan Honican

23. The 208-CWMP-Generalized Comprehensive Plan interrelationships that were discussed in the Draft EIS have been updated in Chapter 2 of this Final EIS.

24. Refer to Response #14 to Joan Honican's written comments in Chapter 4.

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ACRONYMS AND ABBREVIATIONS

ADWF - average dry weather flow

AWT - advanced waste treatment

BOD - biochemical oxygen demand

BOD_5 - 5-day biochemical oxygen demand

C - celsius

$CaCO_3$ - calcium carbonate

CFR - codes of federal regulations

cfs - cubic feet per second

Cl - chloride

CSO - combined sewer overflows

CWMP - Comprehensive Wastewater Management Plan

DOE - Washington Department of Ecology

DSHS - Washington Department of Social and Health Services

du - dwelling unit

EIS - Environmental Impact Statement

EPA - U. S. Environmental Protection Agency

GSP - general sewerage plan

GSSA - general sewer service area (projected 20-year service area)

lbs/day - pounds per day

LID - local improvement district

MCL - maximum contaminant level (contained in NIPDWR)

MGD - million gallons per day

mg/l - milligrams per liter

MPN/100 ml - most probable number per 100 milliliters

N - nitrogen

NEPA - National Environmental Policy Act

NH_3 - ammonia (un-ionized)

NH_4 - ammonium (ionized)

NIPDWR - national interim primary drinking water regulations

NO_2 - nitrite

NO_3-N - nitrate measured as nitrogen

NPDES - national pollutant discharge elimination system

O&M - operation and maintenance

P - phosphorus

pers. comm. - personal communication

PL - public law

PO_4 - phosphate

PSSA - priority sewer service area (projected 10-year service area)

PWWF - peak wet weather flow

Q_{7-10} - lowest average 7-day flow recorded in a 10-year time span

RCRA - Resource Conservation and Recovery Act

RCW - Revised Code of Washington

SDWA - Safe Drinking Water Act

SHPO - State Historic Preservation Office

SIP - State Implementation Plan

SRPC - Spokane Regional Planning Conference

STP - sewage treatment plant

ULID - utility local improvement district

USGS - U. S. Geological Survey

WAC - Washington Administrative Code

WMA - wastewater management area (facilities plan study area)

WWP - Washington Water Power Company

µg/l - microgram per liter

µg/gm - microgram per gram

96 LC_{50} - 96-hour, 50 percent lethal concentration (concentration that will kill 50 percent of test organisms in a 96-hour period)

201 - Section 201 of the Clean Water Act (wastewater facilities planning)

208 - Section 208 of the Clean Water Act (areawide water quality management planning)

INDIVIDUALS AND AGENCIES COMMENTING ON THE DRAFT EIS

Federal Agencies

Advisory Council on Historic Preservation
U. S. Department of Agriculture, Soil Conservation Service
U. S. Department of Army, Corps of Engineers, Seattle Office
U. S. Department of Health and Human Services
U. S. Department of Housing and Urban Development, Seattle Office
U. S. Department of Interior, Office of Secretary, Portland, Oregon
U. S. Department of Transportation
U. S. Coast Guard

State Agencies

Washington Commerce and Economic Development, Spokane Office
Washington Department of Ecology
Washington Department of Game
Washington Department of Natural Resources
Washington State Parks and Recreation Commission

Local Groups, Agencies

League of Women Voters of the Spokane Area
Liberty Lake Sewer District
Spokane City
Spokane City Planning Department
Spokane County Air Pollution Control Authority
Spokane County Planning Department
Spokane Regional Planning Conference
Spokane County 208 Program
The Glenrose Association

Individuals

Julie Coelho
Ray Duff
Larry Esvelt
Mauri Hagen
Marion Hay

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Joan Honican
Philip Kaufmann
Michael Kennedy
Michael A. Kennedy Consulting Engineers
Dan Knierim
Wally Matlock
Alice Mills
Marianne Phillips
Margaret Portman
Sally Reynolds
Tom Rogers
Rhys A. Sterling
Skip Toreson
Joanne Vennema
Glen Yake

LIST OF REPORT PREPARERS

U. S. Environmental Protection Agency - Region 10

Elizabeth Corbyn - Chief, Environmental Evaluation Branch, Seattle, Washington

Roger Mochnick - EIS Preparation Coordinator, Environmental Evaluation Branch; Seattle, Washington

Kathryn Davidson - Project Monitor, Environmental Evaluation Branch, Seattle, Washington

Jones & Stokes Associates, Inc., Sacramento, California

Charles R. Hazel - Vice President, program management

Michael D. Rushton - Environmental Specialist IV, project manager

Mark Cudney - Environmental Specialist I, water quality

Thomas Wegge - Environmental Specialist II, land use

Appendix A

FINANCING PLAN COMPARISONS AND RECOMMENDATION FROM THE CWMP

SOURCE: Economic and Engineering Service, Inc. pers. comm. c.

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TABLE V-2

FINANCING METHOD COMPARISON

	COUNTY CUSTOMER CHARGES	
Capital Costs General Facilities	1980	1990(1) DUE TO DELAYED CONSTRUCTION
Method 1.		
100% G.O. (2)	$ 52¢/$1000/yr	$ 2.43/$1000/yr
Method 2		
50% G.O. (2)	$ 26¢/$1000/yr	$ 1.22/$1000/yr
50% ULID Assessment (3)	$ 21.64/acre/yr	$101.62/acre/yr
Method 3		
100% ULID Assessment (3)	$ 43.29/acre/yr	$203.23/acre/yr
Capital Costs Collection System (4)		
Method 1		
100% ULID Assessment (3)	$366/dwelling/yr	$1,140/dwelling/yr
Method 2		
75% ULID Assessment (3)	$275/dwelling/yr	$ 855/dwelling/yr
25% Revenue Bond (5)	$7.30/dwelling/mo	$22.66/dwelling/yr
Annual O&M User Charges		
County Customer Class for City Facility & Equalization Basins O&M, & Acquisition (6)	$ 6.00/mo	
County Interceptor System	$ 1.45/mo	
County Collection Lines	$ 1.83/mo	
Household Connection Charges		
Costs to connect house with existing septic tank/drainfield to collection system	$300-$1300 (7)	

(1) 1990 values illustrate the impact of inflation on project financing. Costs associated with capital construction were inflated at 12% per year. The $20 million grant for capital costs associated with the interceptor/Basins was assumed to remain constant. Annual debt service will depend on the interest rate when financing is arranged and will be set for the period of financing; i.e., 20 or 30 years. O&M was not projected to 1990 because of the potential change in treatment requirements at the City plant and problems associated with projecting labor, energy and chemical costs ten years into the future.

TABLE V-2 (CONT'D)

FINANCING METHOD COMPARISON (CONT'D)

FOOTNOTES

(2) General Obligation Bonds have a 30 year maturity period with an assumed interest rate of 9½%.

(3) ULID assessments were assumed to apply on an area basis. Bond maturity is 20 years with an assumed interest rate of 9½%. It should be noted that assessment for collection systems would be calculated on factors in addition to area.

(4) These values are based on costs for a collection system serving 660 dwellings on 320 acres. County customer charges include $3233/dwelling for the installed system plus financing charges which vary between ULID and Revenue Bonds.

(5) Revenue Bonds are repaid through increases in user charges. The bond maturity is 30 years with an assumed interest rate of 10½%.

(6) $6.00 per month is assumed to compensate for City O&M costs for the sewage treatment plant, in-City interceptors, operating the equalization/storage basins, and acquiring capacity in the City system.

(7) Range of costs will vary with soil conditions, depth to collector sewer, amount of restoration work needed. Costs assume approximately 75 feet between house sewer and collector sewer, moderate amount of lawn and pavement restoration.

ATTACHMENT 7

TABLE V-3

RECOMMENDED FINANCING PLAN COST ESTIMATES

PHASE I

The CWMP recommends a two-phased general facilities construction program with the collection system for specific areas constructed as required. The Phase 1 program outlined, provides for interceptor service to the North Spokane, Spokane Valley (to Sullivan Road) and Moran Prairie areas. The following costs incorporate the entire Phase I program. It also provides sub-elements that would allow for a reduced Phase 1 program if local government chose to implement the program in smaller segments.

General Facilities	General Obligation Bond Financing and State and Federal Grants - See Table IV-3 and V-2	
	1980 Project $	Estimated Financing $
Spokane Valley Conveyance(1)		
. Havana-Sullivan Interceptor, Railroad R/W and Valley Equalization Basin	$19,636,000	21¢/$1000
. Dishman-Mica-Sullivan Interceptor	6,124,000	7¢/$1000
. Millwood-Pasadena Park Interceptor	6,900,600	8¢/$1000
North Spokane Conveyance(1)	13,112,000	15¢/$1000
Moran Prairie(1)	714,000	1¢/$1000
Total Cost of General Facilities (2)	$46,486,600	52¢/$1000

Collection System - ULID Financing

100% ULID or Developer Financed (3) - $366/dwelling/yr

Operation & Maintenance - User Charge Financing

Treatment Plant/Interceptor Collection and Acquisition of Capacity in City System (4) - $9.28/mo.

Household Connection Charges

Household connection to collection system $300-$1300

TABLE V-3 (CONT'D)

FOOTNOTES:

(1) Financing costs presented as a % of total general facilities cost based on Table IV-3 and V-2. Each element can be further reduced depending on service desired.

(2) Total cost shown includes 100% of railroad R/W cost, does not include acquisition of City capacity (included in O&M user charges) and assumes a $20 million grant will be obtained from the DOE and EPA.

(3) Cost based on 660 customers in a 320 acre unit. Cost could be less if developer installs facilities as part of initial subdivision development program.

(4) O&M costs would be increased or reduced depending on service area and density included in Phase I. Estimate acquisition cost of 10 MGD capacity in City waste treatment plant and interceptor system included in user charge.

Appendix B

MATERIAL APPENDED TO LETTERS OF COMMENTS ON THE DRAFT EIS

Material Appended to Letter
from Joan Honican Dated
May 14, 1981

EXCERPT FROM —
"A CITIZEN REPORT ON THE
GENERALIZED COMPREHENSIVE PLAN"
APRIL 1981

"208" WATER QUALITY MANAGEMENT PROGRAM

PROBLEMS:

Primary responsibility to control land use to protect the aquifer rests with local government. If we abdicate that responsibility, as is so often the case, it will be imperative that the State or Federal Government step in and demand controls.

West Plains was not included in the 208 study area even though it is under heavy presure for development and the only reliable source of water is the Spokane-Rathdrum aquifer.

Although the 208 Plan has been certified by the governor and "conditionally" approved by EPA, it has no status as an official control or legal planning tool in Spokane County. Despite extensive citizen volunteer time and tax dollars the plan can "legally" be ignored.

Aquifer Sensitive Area (ASA) recharge boundaries do not correspond to EPA's recharge boundaries. To have such boundaries coincide would mean the Colbert and Mica landfills are over the recharge area of the Sole Source Aquifer.

Identified major recharge tributaries (Plouf, Liberty Lake, Newman Lake, Saltese, Peone-Deadman) and others not identified were not included with the ASA for any special protection even though they have to carry the increasing runoff from the impervious developments.

Neither the County, City, nor Regional Planning Conference has the statutory authority to assume implementation responsiblity for the 208 Management Agency Implementation Statements (MAIS's).

The recommended "fill-in" development policy in the 208 applied specifically to the Priority Sewer Service Area (PSSA). The high density, "fill-in" definition in the Comprehensive Land Use Plan completely undermines the intent of the 208 recommendation by encouraging an expanded definition of "fill-in" . . . . The Comprehensive Plan definition reads ". . . between and in close proximity to at least two existing developed geographic areas having densities and land use which conform to the Comprehensive Plan Map categories designated for those geographic areas." In other words, "fill-in" the leap-frog development which erroneously has been allowed throughout the years.

The PSSA is supposed to be sewered in 10 years. The General Sewer Service Area (GSSA) would take at least 20 years. In order to make future subdividing feasible, as the PSSA is sewered, the 208 recommended a 5-acre minimum lot size in the GSSA. With the present economic conditions we certainly can't depend upon the largest capital outlay this community has ever contemplated becoming a reality. We must see some demonstrable evidence that the PSSA can be sewered before we forge ahead with high density development in a much larger area.

PREPARED BY - THE COUNCIL FOR LAND CARE AND PLANNING, INC.

Urban stormwater runoff was second only to sewage in its negative impact upon the aquifer. Nevertheless, only sewage will be picked up by the proposed interceptors. With high density, fill-in we can only accelerate the stormwater runoff problem. The only mitigating measure recommended is grassed percolation, about which little if anything is known. We do know there will be no treatment when the ground is frozen or saturated which can be many months of the year.

Little data is available on other area aquifers but due to extensive documented problems with retaining an adequate water supply in Cheney, Four Lakes, Medical Lake, Airway Heights, Colbert, etc., it is apparent they will eventually have to tap the major aquifer for a dependable supply.

The 208 stated we may already be using 50% of recoverable water. It also stated the aquifer is a finite source with development limitations but the USGS Model which was supposed to give us some figures relating to this critical area was never completed. We are, therefore, left in limbo not knowing anything specific but at the same time classifying eight times more land than required for the next five years.

Throughout the 208 process there appears to be no awareness of the fact that congress approved a Bureau of Reclamation project to irrigate the Rathdrum Prairie, the major holding area for the Spokane-Rathdrum Aquifer. This would be Idaho's counterpart (or extension) of our Spokane Valley project (Consolidated Irrigation). Spokane Valley was "sold" to congress and the general public under the guise of promoting agriculture. As is so often the case, the availability of a dependable water supply resulted in speculation, subdivisions and the forcing out of farmers through enticement, increased appraisals or conflicts with urban density development. The '67 start-up of Consolidated was the beginning of the end for aquifer protection and recharge in Washington State. Now, waiting in the wings, is another project, on the Idaho side of the border, already approved and just waiting for an appropriation to begin construction. Interesting to note also, is the fact that Consolidated's staff and attorney have testified at public hearings in favor of subdivision development expressly because it helps their payback rate. Domestic users (subdivisions) pay a higher user fee than irrigation users (farmers).

* * * * * * * * * *

RECOMMENDATIONS

An amended 208 study must be begun immediately to include West Plains and its potential impact upon aquifer quantity and quality. The 208 law encourages enlarging of boundaries, additional studies and amended plans as new information and deficiencies come to light.

No local governmental entitites (including the Regional Planning Conference) have the required legal authority to oversee implementation of the 208. The only governmental entity with the responsibility to protect all the waters of the state from pollution is the Department of Ecology (RCW 90.48). We must insist they assume their responsiblity under that statutory charge from the legislature.

Either EPA's recharge boundaries are inaccurate or our 208's are. We cannot afford to be arbitrary when we are making such decisions as the proper location for landfills, sludge disposal and toxic waste storage. With the projected huge increase in population and its attendant wastes, it is imperative that boundaries not be arbitrary.

With about 90% of our drinking water originating in Idaho, we must assume responsibility for protecting the 10% on the Washington side. In order to do this, all tributaries must immediately be identified and given special protection from adverse land use. Those major tributaries already recognized in the 208 Plan must be declared "environmentally sensitive" and included in the Aquifer Sensitive Area boundaries. The exclusion of these tributaries is a major deficiency in the 208.

Now that wells adjacent to the Colbert landfill are seriously contaminated, $100,000 has been allocated by various agencies for much needed testing at both Mica and Colbert dumpsites. Another site that deserves the same scrutiny, but is being ignored, is the Bonenko sludge dump on Argonne Road in the Pasadena Park area. Due to the fact that the Health District has assumed little if any responsiblity over private pumpers, it is imperative that we determine what potentially devastating wastes have been dumped at this site over the last five or six years. "Septic tank pumpers" is nothing short of a public deception as citizens have not been made aware of the fact that these same pumpers have consistently been pumping wastes from chemical holding tanks in addition to human wastes. Wells and springs surrounding this site must have an immediate, complete, chemical analysis including tests for solvents such as trichloroethane.

The MAIS section of 208 must be analyzed to prioritize responsibilities based upon their urgency. After prioritizing, an assessment must be made to determine whether the appropriate agency has been charged with the implementation and whether or not that same agency has the statutory authority to follow through. Development must be held in abeyance in sensitive areas until such prioritized ordinances and regulations are an actuality.

A decision appears to have been made by some one (?), somewhere along in the process (?), that stormwater sewering, particularly over the aquifer, was not economically feasible. A thorough public discussion of the known treatment capabilities of urban runoff by grassed percolation is long overdue. We are presently being asked to make some of the toughest environmental and economic decisions to protect generations to come and we cannot do it in a vacuum or without all the information for an informed judgment. A convocation on the stormwater issue alone is mandatory.

Before we blindly continue following "trends" in development over the aquifer as reflected in the current Comprehensive Land Use Plan, we must have definitive answers to the following questions. Are we using 50% of recoverable aquifer water? What, recognizing the aquifer as a finite resource, is the development limitation? Can the expansion of the original 208 PSSA boundary be justified? What are the implications of the new federal regulations regarding underground injection wells?

Either the County Commissioners or the Governor must initiate a proposal for "Interstate Management of the Spokane-Rathdrum Aquifer."

The "208 Plan" must be officially adopted by the Board to give it legal status as a planning tool for Spokane County. All that work and expenditure of taxpayer funds must not continue to be ignored!

"201" COMPREHENSIVE WASTEWATER MANAGEMENT PLAN

The 201 study area boundaries conform to the Critical Water Supply boundaries, not the 208. We therefore see the 201 study incorporating the same West Plains area that was excluded from the 208 study without the necessary data to determine interrelationships and best decisions for long range planning for the region.

Admittedly the 201 Plan follows the Comprehensive Land Use Plan. It also automatically follows that if the Comp. Plan is not technically sound neither is the 201.

The consultant on the 201 expressly stated the final document would meet the legal requirements for sewage plans for both federal and state law. We now learn that this is not the case. The 201, as presently printed, does not have sufficient detail to meet the requirements of state law and therefore cannot be approved by the Depts. of Ecology and Social and Health Services.

The public has continually been given polarized alternatives to select from. The numerous variations in between (e.g. the Latenser Plan) which have been ignored or slipped by are relatively unknown to the majority of the people.

We're being told a General Obligation Bond Issue will probably be on the ballot this Fall. But, we are not being told the total costs to the taxpaying public and we're not being told how such a system will be sized. If it follows the Comp. Plan it would have to maximize the size to conform to the potential maximum population growth contemplated by the adopted Classification Map of Spokane County. Since developers have historically tried diligently to maximize the density on each postage stamp lot in Spokane, the new Comp. Plan with its 17 unit per acre, commercial and heavy industrial classification (over the aquifer) and its expressed encouragement of high density fill-in makes saturation development inevitable.

The 201 expanded the PSSA which was already too large in the 208.

There is a built-in funding problem under both federal and state construction grant programs in that they are not supposed to fund projects which will encourage sprawl and the escalating loss of agricultural lands.

We don't see any fallback position if the proposed funding package doesn't materialize.

Someone, somewhere obviously made the determination not to include sewering for urban runoff even though the 208 stated that such runoff, at existing densities, contributed almost equally to the degradation of our Sole Source. The 201 deals with only one source of the overall problem. EPA's Draft EIS on the 201 states, "The metals, solvents, herbicides, pesticides, and numerous other chemical compounds that are frequently found in runoff from urban areas may be just as significant a threat to Spokane's drinking water supply as sanitary wastes considering the extent of development planned over the aquifer east of the city."

RECOMMENDATIONS

In light of severe deficiencies and conflicts in local planning for land use over the sole source aquifer, the 201 in its present form is premature and incomplete. A capital cutlay of this magnitude and with the most complex environmental, economic and social considerations should not be rushed precipitously to a vote, or irretrievable commitments. We therefore recommend the formation of a knowledgeable, working committee of agency representatives. and lay citizens to determine the implications of the following studies for which huge sums of public monies have been expended: (1) Comprehensive Land Use Plan and Classification Map; (2) 208, (3) Wasteload Allocation Study (Dept. of Ecology), (4) Underground Injection Control Report and (5) Draft EIS comments on all documents.

A public hearing is needed to determine whether or not the 201 as it now stands does or does not meet state requirements for the County Services Act and WAC 173-240. We also need to know if it's appropriate for a hired consultant to personally lobby officials in Olympia or are they only to do an objective study?

Since we, the taxpayers, are going to be asked to pay for the project we had better be given all information necessary to make the best informed decision. A public debate must be arranged between the major entities involved (City, County, Dept. of Ecology, EPA, etc.) to air the critical issues presently being discussed behind the scenes in Olympia and Spokane. We would assist in such arrangements.

How would a system be sized with a 40–50 year Classification Map? How does the City's required separation of stormwater and sewage fit into the overall scheme of things? How does 201 justify the expansion of the 208 PSSA boundaries? Can we realistically expect funding for a system which perpetuates sprawl and loss of agricultural lands? Can we realistically expect any other than minimal federal funding? Why is urban run-off over the aquifer being ignored? How can funding be acquired without a vote of the people? What can we realistically expect from state Referendum monies? Where will the trunk lines and lift stations be located for the total collection system? Who determined the "Phasing" of 201 and how? What is the bottom line as far as cost to both City and County residents? Will an assessment be made, and a mechanism developed, to protect those who genuinely can't afford additional costs? Until the above minimal questions are dealt with, up front, by those with the answers we cannot envision blind support for such a multi-million dollar capital outlay. We expect straightforward anwers.

We need to know if a scaled down demonstration project has been considered in light of present serious economic conditions? We need to prioritize on a smaller scale for various fallback positions.

GENERAL COMMENTS ON THE AQUIFER

Good planning does not follow disastrous trends; it directs growth to the appropriate areas with the least physical, economic and social detriments.

During the recent court arguments on the Stay of the Comprehensive Plan, a County planner when asked directly what Spokane County had done to protect such a valuable resource as the aquifer, replied, "Very little." These words sum up perfectly the abdication of responsibility so prevalent in Spokane. We have overclassified "more of the same" in a region with no data on carrying capacities, no groundwater standards, no watershed protection, no subsurface discharge permit system, no control over Idaho's plans to develop its own area, practically no historical background data in any area, no margin for residual buildup of contaminants in our soil, uncounted thousands of underground injection wells on every corner. Are you aware one-half (500) of the entire State's total sewage systems which discharge over 3,500 gallons per day into drainfields are in Spokane County? Also, that numerous drainfields are paved over in direct violation of state law?

Recognition must be made that local studies are starting from someone's preconceived idea of what is "politically feasible" rather than from a position of neutrality and objectivity. We resent paying for political documents that are not in the best interests of the community as a whole.

As a group we are convinced the Spokane Aquifer is not a sponge with unlimited capacity for absorbing or diluting pollutants and neither do we feel that the law of gravity has been repealed.

We cannot afford to play Russian Roulette with a Sole Source drinking water supply by encouraging high density "fill-in" development over such a huge area as the FSSA. A rational demonstration project must be developed to see if anything other than rural plumbing is even feasible.

We paid a million dollars* for Capability maps and data that are nowhere reflected in the adopted Land Use Plan and Map. We demand an accounting!

A thorough analysis is in order and long overdue as to how we overclassified eight times more land than projected to be needed for the next five years.

How does the Plan Commission and the Board explain the fact that each and every agency with expertise sees the same defects in the recently adopted Comprehensive Land Use Plan? Are we all out of step, or is the County? And, why were there no responses to comments and questions submitted at the public hearings?

The 5 acre waiver (10.1.3) in the GSSA must be removed from the Comprehensive Plan.

Since the 208 proved conclusively that drainfields were insidiously contaminating the aquifer, how can interim systems allowed in the Comprehensive Plan ensure protection of that same aquifer (10.1.1)?

KNOWN CONTAMINATION EVENTS IN SPOKANE COUNTY

26,000 gallon diesel spill from storage over the aquifer.

Millwood, Model Irrigation and Edgecliff all had to close wells due to persistent bacterial contamination. Other systems have required periodic flushing and chlorination.

Some excellent private wells were lost due to cyanide infiltration from the Kaiser Mead potlining dump.

Contamination from 1.1.1. trichloroethane in Colbert wells adjacent to the Colbert landfill, sludge and chemical dump. EPA tests have detected such solvents in drinking water sources along Trent also.

Tordon, an herbicide, has been persistent in the Airway Height drinking water system.

Heavy concentrations of chloride polluted the Kaiser Trentwood and Great Northern wells decades ago. The Kaiser Trentwood chloride dissipated relatively quickly due to the fact that it is in direct line of flow of the major portion of the aquifer and received more dilution. The Great Northern is still unusable to this day as there has been insufficient infiltration of clean recharge to dilute the heavy concentration of chloride. The aluminum dross which caused the previous problems has also ruined a private water su supply in the foothills resulting in litigation and an out-of-court settlement for a new water supply for the property owners. Another dumpsite for aluminum dross (Heglar and Kronquist roads) has been posted by the Health District as a dangerous area. There is a cave-in potential and the site is venting ammonia fumes. A mountain of the same material is now being built at the Mica landfill by daily trips from Kaiser. The dross is extremely water soluble and is being dumped within the Sole Source Recharge boundaries of the aquifer.

High nitrates, very damaging to newborns, are especially prevalent on fringe areas of the aquifer. Consistently high readings have been taken at Hutton Settlement, Mead wells (near the abandoned North Star dumpsite), the Miller well in the Pasadena Park area, the Gerimonte well in South Opportunity and the Pleasant Prairie well.

An ex-chemistry teacher living in the Orchard Prairie area with a 160' private well discovered an oil slick in her bathtub. In checking, she learned several oil pipelines run through her general area. Although none admitted to any awareness of a leak, the oil gradually dissipated. But for many months she had to import bottled water.

Uncounted thousands of drainfields have failed in the North Suburban, Ferris and hillside development areas. Raw sewage has run down the hills from Ponderosa, Painted Hills, Dishman Hills and the Red Lion Motor Inn. Numerous lagoons have eroded and overflowed such as Fairwood into the Little Spokane and Deer Park's system into Dragoon Creek. Cheney's system has also had persistent overflow problems. Major drainfields have all had to be replaced at: University City, Hillview Estates, Aloha and Castle subdivisions, to name only a few.

CORRESPONDENCE
RE: SPO. COUNTY
VIOLATIONS OF
REGS.

~~File Copy~~
EXHIBIT B

November 10, 1980

Dr. John Beare, M.D.
DSHS
Olympia, WA. [illegible]

Dr. Beare:

As a member of the Review Committee drafting amendments to WAC 248-96 and a Planning Consultant, I want you to be aware of wholesale violations of the DSHS On-Site Minimums in Spokane County.

The Local Health District has consistently allowed paving and vehicular traffic over drainfields and loading rates three or four times higher than DSHS and DOE design criteria. As a direct consequence, numerous systems have failed and review and approval responsibility of DSHS has been circumvented.

Despite our best efforts, the Spokane County Health District refuses to comply with Sections 1.04.380 and 1.04.390 of its state approved regulations and continues allowing installations that do not meet the state minimums. Huge apartment complexes have sprung up overnight with drainfields under paved, postage-stamp lots.

A major loophole is the wording of WAC 248-96-020(6), "...at any common point". Mary Plews and the entire Spokane staff can detail numerous examples of "Nine unit installations" such as PN-1[illegible]-80 (Green Hollow Subdivision) and the apartment complex at Pines and 32nd.

A more recent example and one for which I'm requesting your personal and immediate assistance is a pending Mobile Home Park (ZE-96-80). This Park will be located in a particularly sensitive area where numerous wells are already running over [illegible] ppm nitrate. The site is an integral part of a major recharge area to the sole source aquifer and has a lengthy history of surface water drainage problems. In fact, the entire area is presently under study by CH2M Hill to decide how to deal with runoff. Despite all of the above adverse environmental problems and many more, an EIS was not even required and approval is forging ahead. For additional information we are attaching a copy of substantiating data to support our position on a Request for Reconsideration to the Spokane Board of County Commissioners.

After my first Review Committee meeting at Sea-Tac, I learned other areas of the state are not faced with such abuses of local power. But, the violations in Spokane County are rampant and demand immediate, emergency action. Spokane, with a sole source aquifer, cannot afford to wait for the Review Committee to accomplish its task. An emergency directive is imperative!

Urgently,

[illegible]

STATE OF
WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF SOCIAL AND HEALTH SERVICES
Olympia, Washington 98504

December 10, 1980

Ms. Joan Honican
South 5904 Bowdish Road
Spokane, Washington 99206

Dear Ms. Honican:

Thank you for alerting me to the proposed mobile home park, identified presently as ZN-96-80 in Spokane County. I am directing staff members of the Water Supply and Waste Section to review not only the proposed mobile home park, but the general application of WAC 248-96 where it appears that violations have occurred.

The project's most significant problems and conflicts with the state on-site sewage regulations appear to be as follows:

1. Sewage application rates exceeding WAC 248-96-095(5).

2. High density - WAC 248-96-050 and WAC 248-96-090.

3. Protection of potable water supply source - WAC 248-96-050.

4. Paving over drainfields - WAC 248-96-100(C2).

If the issues you have identified in your request are verified, then I will direct the Spokane County Health District not to approve the project without our concurrence.

The present Spokane County Health District regulations were approved by me. The conflict clause of the Health District, Section 1.04.390 mandates the local department to enforce more stringent standards if there are conflicts with the provisions of other health standards including WAC 248-96. My approval of the existing local regulations was made based upon Section 1.04.390 being used for projects such as the proposed mobile home park.

As previously noted, the matter will be investigated and directives issued if the facts presented are verified.

Sincerely,

John A. Beare

John A. Beare, M.D., M.P.H.
Division Director OB-44
Health Services Division

JAB:lar

cc: Tom Justus, Regional Engineer
M. Marashi, M.D., Spokane County Health District
John Spencer, DOE

[illegible]
[illegible]

STATE OF
WASHINGTON

DEPARTMENT OF SOCIAL AND HEALTH SERVICES
Olympia, Washington [illegible]

J.M.D.

File
Spokane
Geol.

April 9, 1981

3

Mary Q. Luther, M.D., Health Officer
Spokane County Health District
West 1101 College Avenue
Spokane, Washington 99201

Attention: Mr. Edward M. Pickett, R.S., M.P.H.
Director of Environmental Health

Dear Dr. Luther:

A written complaint concerning your staff's action on rezone application #ZN9680 was received by Dr. Beare on November 10, 1980. The letter was written by a Ms. Joan Honican who expressed several concerns about violations of WAC 248-96. More specifically, Ms. Honican has allegated that community septic tank systems are being approved by your department which do not specifically meet the requirements of the following:

1. WAC 248-96-100(2)
2. WAC 248-96-095(5)
3. WAC 248-96-110(3)
4. WAC 248-96-050(3)

Dr. Beare replied to Ms. Honican's letter and directed me to review the situation and to recommend appropriate action if there was substance to the allegations suggested by Ms. Honican. If you recall, we discussed this matter on my 1st trip to Spokane on February 10, 1981.

After a review of the rezone application data and after a review of other systems approved by the Spokane County Health District, I do believe that violations of WAC 248-96 are occurring with surprising regularity. The violations appear to be confined to the following items:

1. Drainfields are being covered with impervious surfaces.

2. Sewage application rates exceed limits established by the Interim Soil Evaluation Guidelines and are computed incorrectly.

3. Design loading differs significantly from standards established in USPHS #526 and other documents.

Ms. Honican also suggested in her letter that various water quality violations are occurring and have been caused by actions or inactions on the part of the Spokane County Health District. Section 050 of the State Board of Health Rules and Regulations for On-site Sewage Disposal discusses to some degree the standards relating to ground water pollution. Section 050 more specifically relates to hazardous sites, treatment potential of soils, and soil depth requirements. The proposed mobile home park is located in an area identified as a direct recharge zone for the Spokane aquifer. Recent studies conducted by the Spokane County 208 organization have concluded that significant nitrate accumulation is occurring downstream from the proposed mobile home site. I believe this issue should also be of concern to you and to the Department of Ecology.

Admittedly, the Spokane County Health District rules and regulations allow for some deviation from the state standards. Your local rules were approved by Dr. Beare in 1976. However, your regulations contain a conflict clause in Section 1.04.390. If, according to your local rules, there is a conflict with another set of rules, the more stringent will prevail. In the cases cited concerning violations of specific WACs, the state rules are more stringent and should be enforced. Local deviations from the state standards are allowable for those sections in the state regulations where this is permitted. In the specific sections identified, local deviation is not permitted without specific qualifications.

If convenient for you, I would be available to discuss the apparent conflicts and hopefully achieve a resolution of the issues. Our Spokane regional staff should also be part of any discussion since they work more closely on a day-to-day basis with your staff. Would you please call me at (206) 753-3467 to arrange a mutually convenient time for such a meeting?

Sincerely,

Gary Plews

Gary Plews
Water Supply and Waste Section
Health Services Division

GP:mh

cc: Ken Merry
Jim Pluntze
Eric Slagle
Tom Justus
DOE

EXCERPT FROM THE DEIS
OF THE SPO. COUNTY COMP.
LAND USE PLAN

EXHIBIT C

Detailed maps of existing County-wide land use patterns are available within the Planning Department. These maps show that major commercial activities in the County are primarily extensions of the commercial activities in Spokane City. The major thoroughfares of Division Street, extending north of Spokane, and Sprague Avenue, running eastward in Spokane Valley, extend outside the City and are primary supporters of commercial activities. Large shopping centers exist in the Valley, and more centers are being proposed there and north of Spokane. Commercial activities within the County are also found east of the Spokane International Airport and sparsely along State Route 2 running west of Spokane. Commercial zoning follows very closely with existing land use patterns suggesting that commercial uses follow shortly after commercial rezones are requested. Lands in the valley along Trent Avenue, in addition to lands adjacent Sprague Avenue, are zoned primarily Commercial or Industrial. Other commercial zoning is located north of Spokane adjacent Division Street to the area around the intersection of State Route 395 and State Route 195. Other lands west of Spokane in the Airport Vicinity areas are also zoned Commercial. Most of the industrial development occurs east of the Spokane City boundaries between Trent and Sprague Avenue. Sparse, large industrial developments also occur in the Mead area north of Spokane, east of Division Street, and in areas west of the Spokane International Airport. The present pattern of existing Industrial zoning is very similar geographically to industrial development patterns.

Environmental Impacts:

Major impacts the Comprehensive Plan has upon the area's land use will largely depend upon the decision makers use of the Plan. Should the decision makers adopt the Plan through resolution, the Plan will have substantial influence upon future decisions. Should the Plan be "accepted", its impact could be small compared to an "adoption".

for the Plan may not be used in any decision-making. The Plan may also be rejected or amended by the present decision makers (Board of County Commissioners) in which case the Plan as presented will have little or no impact. As mentioned in the introduction and summary, the assumption is made that the Plan will be adopted as presented and guide future land use decisions made by various decision makers.

Should the Plan be adopted, the largest impact upon land use will most likely be connected with what is termed "development sprawl", or the expansion of various future land uses over a large area rather than the concentration of land uses. Such sprawl may occur from several aspects of the Plan. First, the future population which can be accommodated within the existing categories is 2 times that population which is projected over the next 20 years. If one assumes that the Plan will be updated every 5 years, that suggests there is 8 times more development land indicated on the Plan Map than is needed. Such multipliers suggest that policies do not encourage development close to existing facilities and services, but actually encourage expansion over a broad area (especially since land away from these services is often less expensive than land near these facilities and services).

Secondly, in many places there is "Suburban" classified land surrounding "Urban" classified land according to the Plan map this can result in "leap-frog" development once the Plan is updated. Once Suburban land is developed at Suburban densities, Urban densities are unable to expand into the Suburban categorized land. The Urban category must expand beyond the Suburban category or expand into an area which has not been developed. This situation exists south of Opportunity, west of Liberty Lake, north of Millwood, and east of Mead.

Thirdly, commercial activity is encouraged by the Plan Map to continue in its " strip" format since few Commercial "nodes" or centers are designated. The Map simply outlines major Commercial lines along Division Street, Trent and Sprague Avenues, Argonne and Sullivan Roads (See Map 1). Such Commercial development may precipitate traffic congestion and also encourage residential development along commercial activities, thereby possibly encouraging spreading of future development.

Fourthly, major Industrial categories are being proposed in two major areas---one east of Spokane City in the Valley, and one west of Spokane where little Industrial activity presently exists. Encouraging Industrial activities over a broad area can continue to encourage development supporting such Industrial activities also over a broad area.

This development sprawl potential becomes an important issue when considering agricultural and/or natural land preservation, energy costs, service costs, and facility costs. The more land development consumes, the less land there is available for agricultural production or natural amenities. Also, it has been shown in studies that more concentrated development consumes less energy and costs less to service with public facilities (such as roads, water, utilities, etc.) than does sprawled development.

The generality of the land use categories of the Plan may also create problems with the County's land use. Several land use categories do not provide guidelines to decision makers on a more specific basis. While this allows flexibility for the decision maker, it produces less certainity for the landowner and for the decision maker under various circumstances. This makes it possible for inconsistent land use decision making. For example, the "Urban" classification proposed within the Plan is a very broad category. While within its definition it is meant to allow commercial, business and some industrial activities, there are no decision guidelines defining where or what types of commercial or industrial [illegible] permitted on Urban classified lands. There are no policies giving local business locational direction wit the Urban classification. Such criteria must be found wit the Major Commercial Category.

The "Industrial" classification is another example of anot land use category which makes it difficult to determine the actual land use impacts. The classification encourages bot heavy and light industrial activities---each having varying impacts. The impact of a series of storage units, for exam will be entirely different than will the impact of a heavy manufacturing plant employing hundreds of workers on severa work shifts.

A large amount of Semi-Rural classification is proposed in Plan. Such a Category when developed requires the same am of some services as the more intense categories. For exam the fully developed Semi-Rural lands will require roads to school services and developed areas. However, lower densit populations in such areas will mean higher individual cost such roads and services than if the land were more intensel developed.

Another impact of the Plan relates to the Rural and Agricul land use classifications related to the Plan's agricultural preservation intent. Although the major intent of the Agr culture classification is to protect agricultural land, the Rural classification may have as much a capacity to preser agricultural land. The Rural classification limits develop density to a maximum of 1 unit per 10 acres of land. While density is established within the Agriculture Category, ho sites of variable size are allowed on "marginal farmland" according to Decision Guideline 6.2.1. No where in the Te however, is the term "marginal" defined. Thus, development density on Agriculture classified lands may reach a higher tensity in some areas.

c) Mitigative Measures:

Sprawl problems mentioned above can be handled either by adopting new ordinances or by changing the Plan as it now exists to keep future development as close to existing services as possible. Adoption of ordinances which encourage development on lands closest to existing development before other lands are developed, or "phased development" will reduce many of the potential sprawl problems. This can be accomplished by planning public facilities only in areas where development is desired, by allowing higher development densities than the Plan defines in areas closest to places of settlement (referred to as "bonus densities"), or providing other economic incentives which would encourage phased development and would discourage sprawl. Phased development could also be important in preventing problems created by large areas being classified Semi-Rural.

To address the "leap-frog" problems created by Suburban classifications surrounding Urban classifications, the Plan Map can be adjusted or continued detailed planning can aid in graduating Suburban lifestyles into Urban classified areas. Areas along the fringe of Urban classified lands may be placed into another category having development intensity similar to the Suburban category. This permits gradual transition between Urban and Suburban categories. Higher density Urban categories would be permitted adjacent Rural classifications thus allowing expansion into Rural categories should it become necessary in the future.

Detailed planning will reduce some of the other problems previously identified. Further planning can divide the Urban Category into compatible detailed residential, commercial, and light industrial categories thereby reducing generality and providing more definite policy guidelines for future development in Urban class fied areas. Also dividing Industrial categorized areas into "light" and "heavy" industry categories will at le aid in projecting those areas potentially having the gr est physical impacts.

Rather than stringing Commercial activities along major roadways, Future detailed planning might cluster such categories into several areas. Future Industrial activ ties might be classified on one side of Spokane or the other thereby preventing the spreading of such activiti throughout the Metropolitan Area.

To prevent someone from taking advantage of the existing Agriculture classification, it may become necessary to provide a definition if the term "marginal" as used wit the Plan Text.

d) Unavoidable Adverse Impacts:

Without changes in the Plan as proposed or without the adoption of mitigative measures outlined above, the Pla may set a formal policy for land use sprawl, resulting in increased service and facility costs and causing hig consumption of land.

ember 3, 1980

Land use planning frustrated

Editor's Note: Mr. Wavada has been studying and reporting on land use planning in Spokane County and North Idaho since 1975. Before joining our staff in May, he was the public information specialist for the Spokane County Planning Department. Much of the following analysis is drawn from his personal experience with the Spokane County planning process.

by Jim Wavada

Analysis

The Spokane County Planning Department recently published an environmental impact statement (EIS) on the county's proposed comprehensive land use plan. What the bulky document says, in so many professional buzz words, is that the plan, as developed by the appointed Citizens Coordinating Committee, is a travesty.

The message is buried amongst the "mitigates, compatibles and implements," but it's there. The plan, which has been six years in the making, simply won't do what a comprehensive plan is supposed to do — provide for orderly, efficient growth.

The most damning indictment of the plan in the EIS is couched in planning terminology on page 100, the land use section of the document:

"Should the Plan be adopted, the largest impact upon land use will most likely be connected with what is termed 'development sprawl' or the expansion of various future land uses over a large area, rather than concentrated land uses."

"The future population which can be accommodated within the existing categories is two times that population which is projected over the next 20 years," the EIS says. "If one assumes that the Plan will be updated every five years, that suggests there is eight times more development land indicated on the Plan Map than is needed. Such multipliers suggest that policies do not encourage development close to existing facilities and services, but actually encourages expansion over a broad area (especially since land away from these services is often less expensive than land near those facilities and services.)"

It's precisely this fact of the plan that makes it a travesty. In claiming to plan for 20 years' population, the Citizens Coordinating Committee would have us believe it's possible to predict population trends that far in advance, or that it's desireable now to commit land for each of these presumed families to have their homes on one acre lots, built over our only source of drinking water.

Moreover, the realities of Spokane County land development is that county land use committments amount to contracts between landowners or developers and the county. If a developer subdivides 100 acres into half-acre lots for homes 20 miles from town and the county okays that plat based on its land use plan, the developer has the right to proceed with his plan no matter how circumstances may change over the next 20 years.

What this has meant to Spokane County in the past and will mean in the future, unless the Plan is changed, is a green light for leapfrog development to continue unbridled.

And why is this happening? Who does it serve? To be sure, Spokane County needs to plan for more people in its future. Professional planners say that can be done by planning in five-year increments, making changes at the end of each of those periods to reflect changes in lifestyles, transportation, population. Further, they point out that development will cost taxpayers less to support if it occurs near existing sewer lines, water systems and other amenities found where city services already exist. Professional planners aren't espousing "no-growth" policies, they're urging "smart-growth" policies.

So why does Spokane County's land use plan show housing miles from any sewage disposal systems adequate to handle it? Why is commercial and industrial development planned only along freeways and highway stops? Why are good-sized chunks of undeveloped agricultural land committed in this plan to urban and suburban density housing?

To answer these questions, the reader need only look at the genesis of this latest planning effort and the people involved in it throughout.

Spokane County Commissioners decided the county needed to do a "real" comprehensive land use plan six years ago after the state, prodded by a lawsuit in western Washington, advised the county its zoning ordinance stood on shaky ground when backed by such a vague and sketchy plan as the one it had then and still has.

But planning is a controversial subject, especially in a county where development traditionally has been a no-holds-barred proposition, where population growth had been modest, and where political philosophies of those in

Continued on Page A8

Land use planning shrugged—

Continued from Page A1

the courthouse had tended to conservative.

When the planning effort became necessary, however, two narrow interest groups emerged with their copies of a blueprint for Spokane County's future.

One group, environmentalist and suburban-gentleman farmers, seized on the prospect of citizen planning as an opportunity to insulate their nature preserves and suburban enclaves from encroaching urban development. This group, generally more liberal than the county population's mainstream, also was better versed in the mechanics of planning than the average citizen. The second group is a coalition of landowner-farmers and real estate developers or their representatives. Approaching planning from a decidedly conservative political viewpoint, this group felt it was absolutely essential to sabotage "this Rockefeller plot for one-world government," (a John Bircher on the committee actually said that), or to protect control over the industry (the real estate people).

When each group presented its version of the plan, Commissioner Ray Christensen dreamed up the absurd idea that these two diabolically-opposed groups get together to combine their vastly different plans. It was akin to mixing oil and water. The two factions barely could stand to be in the same room together, let alone work out an agreement.

In the end, of course, one group had to dominate the process. With a little nifty rigging of subcommittee appointments, the liberal group was "organized out" of the planning process and the conservatives took over.

After six years of foot-dragging, no compromise plan has emerged. A weak attempt to make the advisory committee just that failed and the Coordinating Committee set to dicing up the county like an onion for the stew. When staff pointed out there just isn't any reason to turn so much land in the county to high density housing, it was rebuffed. At least three committee members have plans to subdivide their farms for housing and they weren't about to let any "planner" deprive them of their retirement nest eggs by suggesting their farms should remain farms for awhile yet.

The quickest and easiest way around the hard facts (that population didn't justify urban planning on the Idaho state line) was to change the population forecasts. Since you can't monkey with census reports, the group opted instead to change the length of time for the population projection.

Just one or two extra years wouldn't work up the figures enough to justify what the group had in mind, not even 10 years could do that. Twenty years, however, was just right. Instead of risking a too-obvious attempt to cut themselves a large piece of the development pie, the committee members simply made the pie much bigger. And so the Plan was mapped and land uses categorized so as to allow the highest density possible in each of the land use categories.

Much already has been made of the cost involved in developing the plan.

But little is being said yet about the cost of the Coordinating Committee's creation to present and future taxpayers. They are confronted with the very real possibility of spending their tax dollars for the next 20 years subsidizing the unrealistic dreams of a small group of people whose self interest, with the complicity of the Board of Spokane County Commissioners, has resulted in the bloated land use plan that will go before the Planning Commission for public hearings next month.

There is a dim ray of hope. Staff has managed to hang on to a more sensible map of future land use that rejects the 20-year population projection and talks about the next five years. That plan remains an alternative the Board of Spokane County Commissioners can choose to adopt if it's willing to risk the wrath of the Coordinating Committee and the real estate industry.

DEL REY SUBDIVISION

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

RECEIVED
1980
SPOKANE COUNTY
PLANNING DEPARTMENT

REPLY TO ATTN OF: M/S 443

JUL 28 1980

Wallis Hubbard, Director
Spokane County Planning Department
North 721 Jefferson
Spokane, Washington 99260

RE: Comments on Monte Del Rey EIS

Dear Mr. Hubbard:

We appreciate the opportunity to review the Draft Environmental Impact Statement (EIS) for the Monte Del Rey Planned Community in Spokane. We are concerned with the potential impact of this project on the Spokane Valley - Rathdrum Prairie Aquifer and the lack of detail in the Draft EIS on this issue. ⑯

Since the Spokane Aquifer has been designated as a sole source of potable water supply under Section 1424(e) of the Drinking Water Act, EPA has been involved in several studies to protect this groundwater supply. In addition, the recently adopted "208 Plan" for the aquifer essentially establishes a policy of nondegradation to protect the aquifer. ⑰

The Draft EIS contains little specific information on the impact of placing a drainfield from a treatment plant over the aquifer. For instance, it is stated that "some of the treated wastewater (which contains dissolved nitrates and phosphates) will percolate down to the aquifer level" but does not provide specific details, or even estimated amounts. ⑱

The Draft EIS also indicates that the potential for contamination of the Aquifer should be considered an unavoidable adverse impact of the project. This statement is inconsistent with the goal of the State-adopted 208 plan and the result cannot be considered acceptable. ⑲

We suggest that this project be coordinated closely with Ray Card of the Spokane County Engineering Office who is the 208 Plan coordinator and that the Final EIS contain the level of detail needed to adequately determine the impact of the project on the water supply. ㉙

If you wish to discuss our comments, please contact Kathy Davidson at (206) 442-4011.

Sincerely yours,

Elizabeth Corbyn, Chief
Environmental Evaluation Branch

cc: A. Ewing
D. Robison
R. Card

⑯ Comment noted. The project's impact on the Spokane Valley-Rathdrum Prairie Aquifer will be substantially mitigated by the use of a sewage treatment plant which will degrade organic matter into CO_2 and H_2O, and will remove bacteriological contaminants from the effluents dispersed through the plant's drainfield. Chemicals, such as nitrates and phosphates, entering the drainfield soils will be acted upon there by microorganisms to some extent. It is highly likely, as found in the 208 study, that some undesirable constituents will reach the aquifer from this hillside location. However, to the extent the 208 recommendations are policy of those making decisions regarding Monte Del Rey, the project will be consistent with the 208.

⑰ Comment noted. The "208 Plan" does establish a recommended nondegradation policy to protect the Spokane Valley-Rathdrum Prairie Aquifer. As noted, the U. S. Environmental Protection Agency has recently adopted the "208 Plan" recommendations. It should be noted that no federal funds or financing will be employed. Guidelines and recommended actions espoused in the proposed text of the Spokane County Comprehensive Plan and the Spokane Aquifer Water Quality Management Plan, April 1979, have not been formally adopted by Spokane County. It is recognized that project's drainfield is located adjacent to the Aquifer and within the Aquifer Sensitive Area, and is in conflict with several 208 policies. It must also be recognized that the "208 Plan" guidelines and policies may not be directly applicable to the licensing or approval of the proposal, although many of the recommendations are appearing in agency rules.

⑱ Comment noted. Please reference response 16 above.

⑲ Comment noted. Please reference response 17 above.

Material Appended to Letter From
Rhys Sterling Dated
May 21, 1981

⑳ Comment noted. No response required.

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO
ATTN OF: M/S 409

March 28, 1980

Mr. R. C. Brinck
Service Office Supervisor
Department of Housing and
Urban Development
West 920 Riverside Avenue
Spokane, Washington 99201

Dear Mr. Brinck:

This confirms a March 21 telephone conversation between Harold Scott, a member of my staff, and Mr. Bob Giesa regarding our preliminary review of the February 1980 Ground Water Impact Evaluation for the Summerfield East Addition S.P. #415.

In accordance with our September 1979 Memorandum of Understanding, the project is unacceptable under our "Sole Source" Aquifer Protection Program. The project, as designed, could create a significant hazard to public health because of the increase in the nitrate level in that portion of the Aquifer. Three wells in the general area show elevated ambient nitrate levels of 6.3 and 7.8 mg/l as (N) and the Evaluation Document shows that the 266 homes on septic tanks will increase those nitrate levels.

I have attached a list of specific concerns regarding the Evaluation, and I have sent a copy of this letter to Mr. Rhys Sterling for his information. We would be glad to review the project again after our concerns are addressed.

I hope this information is helpful. Your concern and interest in protecting the Aquifer are appreciated. If you need additional information please contact us.

Sincerely,

William A. Mullen

William A. Mullen, Chief
Drinking Water Programs Branch

Attachment

cc: Rhys Sterling, DOE
(with copy of attachment)

Comments for Preliminary Review of the Summerfield East/Spokane Project

Specific Comments

Page 1

1. The geometry and scale of the site as illustrated in Exhibit A does not match that of Exhibit B.

2. "If a control treatment system is selected, the drainfield would be be located in the P_sA type soil" (Phoebe sandy loam, 0-5% slope). An examination of Exhibit B shows that no type P_sA soils are located within the proposed project site boundaries (some P_sA soils are directly adjacent however).

3. The method by which the data in Exhibit C were generated should be explained - including the validity and adequacy of the sampling.

Page 3

1. The method by which the loading rates were determined should be explained - including how the loading rates relate to the permeabilities.

Page 8

1. "During any month, this daily discharge equals approximately 1.14 inches of water applied over the entire 91 acres, as would be the case if individual septic tanks are used." This statement is not valid. Other than during the initial capillary zone advancement, percolation of septic drainage is essentially vertical with only very little lateral travel prior to encountering the zone of saturation/ground water. Therefore, because the septic tanks and their drainfields are normally located entirely on-site, beneath the residential lawns, the 350 gal x 266 dwellings should be applied only to the actual surface areas of the drainfields. A generous assumption would be to approximate those surface areas by equating them with the total residential lawn surfaces, or 36.64 acres (from 6000 ft^2/lot x 266 lots).Then the daily discharges would total 2.81 inches/month.

Page 9

1. A comment similar to the page 8 comment would apply to calculation of th monthly quantity of irrigation. Since only the 36.64 acres of lawns are irrigated, the volume of irrigation water should be divided by this figure and not by the total 91 acres. In this case the daily irrigation discharges would total 5.77 inches/month rather than the 2.33 inches/month suggested in the impact evaluation.

2. "From the discussion on soils, water-holding capacity of about 0.08 inches/inch (0.96 inches water/foot soil depth) may be used. From soil logs, a depth of about 5 (five) feet to cobbles generally exists on the project site and as a result the root zone and evaporation zone may by assumed to be the same 5 feet." This assessment is incorrect. Firstly, two soil logs, one for each of the two principal soil types identified within the project, are inadequate to define such a critical parameter. Several replicate samples, each set at one of several representative sites, should be collected and analyzed. Secondly, the actual root zone beneath the surfaces (lawns) through which available waters will percolate certainly cannot be assumed to extend the full five feet (grass root zones may extend 10 to 20 inches at best) and the evaporation zone will similarly be severly limited by the surface cover (grass lawn). What these concerns signify is that the estimates of depth and magnitudes of water-holding capacity/field capacity/soil moisture storage are too high. Percolation with resultant loss to ground waters should be more rapid and proceed with less demand for water retention than is suggested in the Report. One means of obtaining a more realistic assessment would be to have soil moisture tests (with depth profiling) performed at the same time as additional soil core samples are collected. Note, however, that conditions as close to those which will be in effect following completion of the project should be chosen; i.e. moisture tests should include grass covered sites. Data obtained previously, but which meet these criteria, are of course perfectly acceptable substitutes (e.g. Soil Conservation Service data). A depth profile of soil moisture retention capacity is desirable because the overburden varies in composition with depth, making the assumption of constant retention difficult to justify.

3. As used in the Report evaluation, the evapotranspiration estimates (PET values) are weighed equally against all sources of water (septic drainage, irrigation, and runoff -- runoff was not included in the evaluation, but is important). This is not realistic because that drainage occurs well below the surface of the ground and therefore has less overburden to percolate through. It also has less effect from evapotranspiration processes, and is discharged on a relatively continuous basis.

4. The water budget as proposed does not include consideration for runoff from impermeable surfaces (roadways, sidewalks, house roofs, etc.). Naturally, the runoff from impermeable surfaces must be added to the irrigation waters, the septic drainage, and the precipitation which occurs directly over the infiltratable surfaces (grass lawns). This means that the precipitation falling on impermeable surfaces must be factored into the water budget; i.e., all of the precipitation falling on the 91 acres of the project will pass directly through only the 36.64 acres of infiltratable surfaces. It is suggested that the precipitation values given in the report/evaluation be multiplied by the factor 2.484 (from 91 ÷ 36.64) to obtain the effective amount of precipition which will actually undergo infiltration and evapotranspiration. Alternatively, a separate class of available water (designated "runoff contribution") may be inserted into the water budget; in which case the factor 1.484 (from (91-36.64)÷36.64) would be multiplied by the precipitation values given in the Report to yield the runoff contribution estimates.

Page 11

1. The revised water budget indicates that substantial waters would percolate to the ground waters during the period of May through October and would therefore be available for transportation of fertilizer nitrogen. Estimates regarding the potential for this transportation need to be revised.

2. "From this discussion, it is apparent that Nitrogen from domestic sewage is available for plant uptake and should remain in the root zone with the soil moisture."

This statement is challenged for several reasons. Firstly, the root zone of the anticipated ground cover (grass) will not likely reach the depth of the septic drainage. Secondly, the septic drainage will occur beneath the portion of the overburden which has the greatest potential for retention/attenuation of the nitrogen compounds and other septic drainage constituents. Lastly, the infiltration of precipitation, runoff, and irrigation waters will wash downward through the overburden overlying the septic drainage, reducing the likelihood of significant upward capillary movement of the septic drainage (except during the winter, when the uppermost 18 inches or so of the overburden is frozen and the ground cover is dormant, so that potential interactions with the septic drainage would be severly limited anyway).

It is suggested that typical retention and leaching characteristics, respectively, be tabulated for the grass/soil and fertilizer combinations in response to these objections.

Page 12

1. The basis for assuming a specific percentage of carryover (25%) from summer activity should be explained. This analysis will have to be revised according to previous comments (allowances made for additional nitrogen, etc.).

Page 13

Exception is taken to the assumtpions used with the numerical model given. Thorough ground water mixing cannot be assumed. The conditions under which optimum mixing would occur include an uniform spacing of groundwater contribution sources, alignment with the groundwater flow direction, high permeability, and a high gradient. The model given would have to account for a variable length of the integration slice (with the "length" of the slice perpendicular to the direction of flow, with the width of the slice held constant, and with the depth of mixing dependent on the gradient).

2. The pore space velocity, V_s, should not be used in lieu of the Darcy velocity, V_d It is not clear whether or not this is being done, but the numerical solution implies that it is. The pore space velocity (termed seepage velocity in the Impact Evaluation) cannot be directly substituted for the Darcy velocity when using the Darcy equation to predict flow from known permeability and gradient. By doing so, an artificially inflated estimate of flow would be arrived at.

3. The adequacies of the Numerical Solution Model and Appendix B cannot be addressed until they are based on more realistic assumptions. Consideration should be given to accounting for plume effects and the geometry of the sites in relation to the flow regime, as well as to increased percolation estimates.

General Comments

1. Although it is appreciated that the impact evaluation should not needlessly include materials presented in the Final December 1978 Spokane Aquifer Cause and Effect Report, it should be appreciated that geologic and hydrologic information should be presented which adequately detail the ground water parameters necessary for complete evaluation of potential impacts. The stratigraphic and lithologic profiles of the project site should be descirbed.

2. The specific ground water flow directions and gradients of the project site and surrounding areas which influence the hydrologic activity at the project site should be detailed. Estimates of aquifer depth and variations, thickness (given), transmissivity (given), storage, recharge, and boundaries/discontinuities should be provided. These data should then be used to project impacts regarding both quality (contamination) and quantity (flow, recharge, and gradient changes, etc.).

3. The source and adequacy of water supplied to the project's dwellings should be identified and addressed. The nitrate levels and impacts thereof from that source must be addressed. For example; if the anticipated source of drinking water is withdrawal of local ground waters by pumping wells on-site or in the immediate vicinity of the proposed project, then what would the nature of the interaction between the pumping wells and the septic drainfields be? We are particularly concerned with the "recycling" of wastewaters with concomitant concentration of contaminants.

4. The impact evaluation should list any active or abandoned wells on the project site and the impact these have on the ground water flow direction and gradient. The proposed project's impact on such wells should also be detailed.

5. Alternative treatment systems need to be presented in detail. The allusions to consideration of an alternative central treatment and disposal facility (page 1) and the cost analysis given on pages 19 and 20 are insufficient. That presentation must be as carefully considered and detailed as the chosen method (re: ground water impacts, operation and maintenance, secondary impacts, etc.).

6. The availability and adequacy of the proposed method of solid waste disposal and any potential effects on ground water need to be addressed. An estimate of 5 lbs./capita-day may be used in the calculations.

7. The discussion regarding Exhibits D and E (which are based on Plates 1 and 2 from the "Cause and Effect" report) fails to recognize some inherent limitations of the proposed site. The project is located at the extreme northermost edge of the Aquifer. The Aquifer receives very little recharge in this locale (from the drainage areas to the north of the proposed site; which are +9 and +11 cfs according to USGS Open File Rep. 77-829 Plate 4). The direction of ground water flow there is primarily to the southwest where the Aquifer subsequently discharges significant flow to the river (330 and 230 cfs, again acording to Plate 4 of USGS Open File Report 77-829). The topography of the drainage area immediately north is also characterized by rapidly rising slop showing that area to be an apparent impermeable ground water divide.

These facts, together with the "Cause and Effect" findings that the edges of the Aquifer are low flow zones (typified by a propensity for stagnation, accumulation of contaminants, lower permeabilities, and diminished saturated aquifer thickness), indicate that the proposed site is expected to have actual transmissivity and flow rates much below those assumed in the impact evaluation. High nitrate concentrations in the Joe Danelo and Trentwood-Mayhew wells (cited on Page 7) confirm these expections. From EPA analyses June 26, 1979 the Trentwood well should be reported as 6.3 mg/l nitrate nitrogen instead of the 3.3 mg/l indicated in the Report.

8. Secondary effects, such as induced commercial and residential growth need to be addressed -- the project needs to be presented in perspective.

9. The impact evaluation does not address the potential for ground water contamination via chemicals used for road maintenance (i.e. de-icers, pesticides, and herbicides) and septic tank maintenance (i.e. degreasing organics).

10. Fuel oil, heating gas and other chemicals which will require on-site storage need to be addressed in terms of potential contamination, preventative measures, and clean-up in the event of accidental discharge.

11. The agency(s) responsible for regulation and pertinent design criteria of the various facets of the construction and maintenance of the project should be cited and their control/interaction summarized.

Revised Water Budget - Summerfield East

	Jan	Feb	Mar	Apr	May	June
Prec.	+1.7	+1.5	+1.3	+1.0	+1.0	+1.2
Runoff[1]	+2.5	+2.2	+1.9	+1.5	+1.5	+1.8
W.W.	+2.81	+2.81	+2.81	+2.81	+2.81	+2.81
Irr.	-	-	-	-	+5.77	+5.77
P.E.T.	-	-	-0.6	-1.6	-3.1	-4.1
F.C.[2]	(4.8)	(4.8)	(4.8)	(4.8)	(4.8)	(4.8)
G.W.[3]	7.01	6.51	5.41	3.71	7.98	7.48

	July	Aug	Sept	Oct	Nov	Dec
Prec.	+0.4	+0.5	+0.9	+1.3	+1.9	+2.2
Runoff[1]	+0.6	+0.7	+1.3	+1.9	+2.8	+3.3
W.W.	+2.81	+2.81	+2.81	+2.81	+2.81	+2.81
Irr.	+5.77	+5.77	+5.77	-	-	-
P.E.T.	-5.5	-4.7	-3.0	-1.6	-0.2	-
F.C.[2]	(4.8)	(4.8)	(4.8)	(4.8)	(4.8)	(4.8)
G.W.[3]	4.08	5.08	7.78	4.41	7.31	8.31

Total = 75.07 inches[4]

(1) Runoff is the result of precipitation encountering 54.36 acres of impermeable surfaces and is assumed to infiltrate the 36.64 acres of grass lawns. It is in addition to the precipitation already falling directly on the 36.64 acres of lawn.

(2) Field capacity (referred to in the report evaluation as "held in soil"); it is equal to the amount of water held in the soil after gravitational water has drained away (includes both hygroscopic and capillary waters). Note that the figure used (4.8) is disputed and is considered to be too high an estimate, based on an examination of the soils discussion.

(3) Ground water (GW); this is the net contribution to ground waters after field capacity has been satisfied. It is contributed by gravitational drainage (also referred to as "pellicular" drainage/movement).

(4) This figure represents the total net contribution (in inches of water) to the ground water via infiltration and gravitational drainage through the 36.64 acres of premeable surface. The total volume of water is therefore 75.07 inches X 36.64 acres = 2751 acre-inches.

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ENVIRONMENTAL EVALUATION
BRANCH

Report On

-Wastewater Control
-Stormwater Runoff
-Groundwater Impact

Original Report By

Arger, Yake & Wright
Consulting Engineers

Modified By

Rhys A. Sterling, P.E.

RHYS A STERLING
153 30

8/20/80